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ABSTRACT

This report, one of nine provincial reports from South Africa, focuses on the 1996's School Register of Needs Survey, one of the foundations of the new government's commitment to equity in education provision and improving the quality of learning and teaching. The School Register of Needs Survey's objectives were to locate and map every educational institution in the country; survey the physical facilities, conditions of buildings, and services provided; and establish a database of all school information collected. The North West Province 2413 schools were surveyed; of these, 67.18% were primary-school-level institutions, 26.14%, secondary-level schools, 5.01%, combined schools, 0.04%, technical colleges, and 1.62% were special schools. Chapters include: (1) "School Register of Needs Survey"; (2) "Third International Mathematics and Science Study (TIMSS); (3) "Longitudinal Survey of Scholastic Achievement"; (4) "Overage Learners"; (5) "Matriculation Results (1996)"; (6) "Register of Graduates"; and (7) "Summary." An appendix presents school register of needs survey data per magisterial district for the North West Province. Twelve maps are also appended. Contains 29 figures and 9 tables. (BT)

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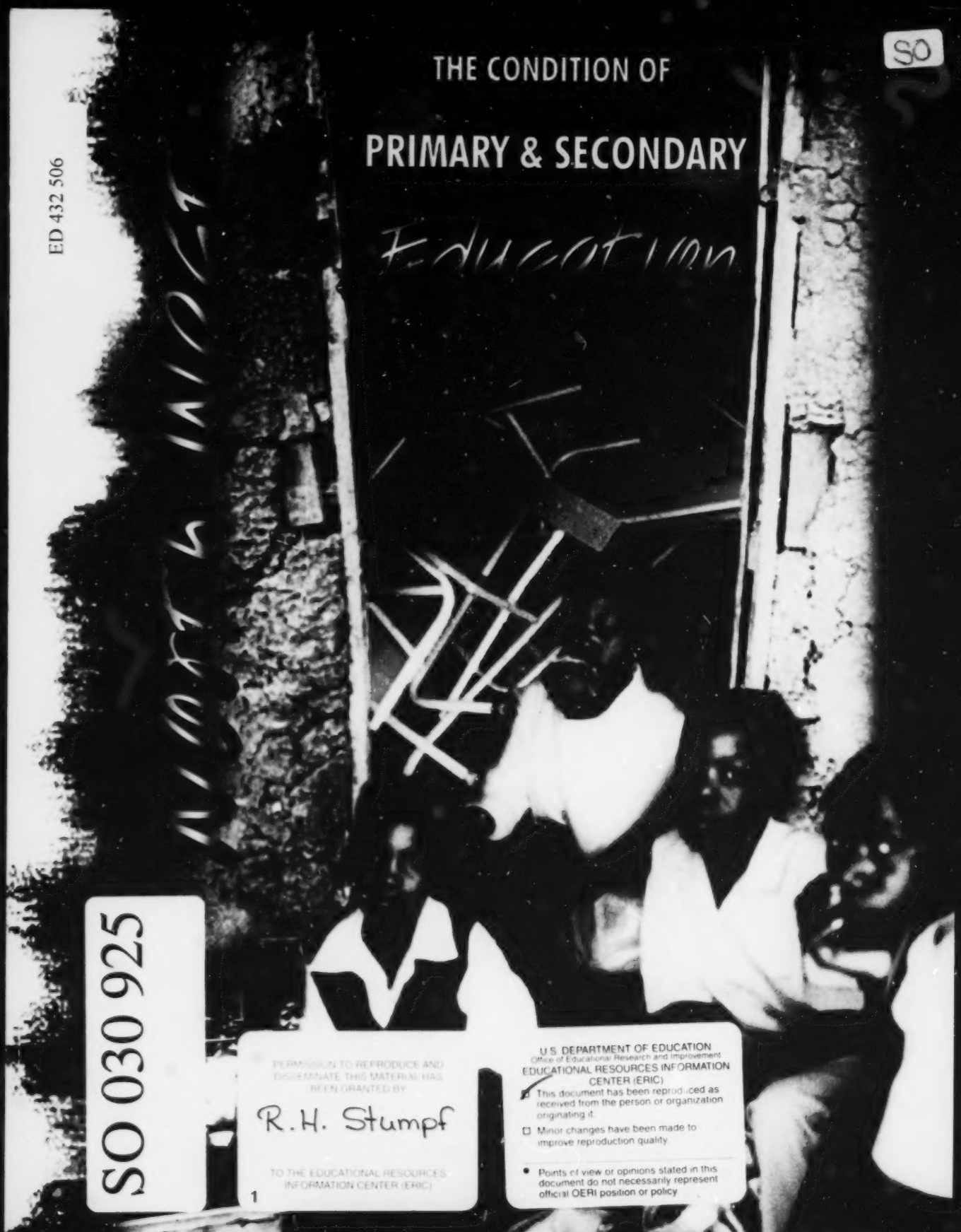

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Author: Adèl Hartley
Co-authors: Mariette Visser
Charles Sheppard

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THE CONDITION OF PRIMARY AND SECONDARY EDUCATION IN THE NORTH WEST PROVINCE (1995/1996)

THE CONDITION OF PRIMARY AND SECONDARY EDUCATION IN THE NORTH WEST PROVINCE (1995/1996)

Author
Adél Hartley

Co-authors
Mariette Visser
Charles Sheppard

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- Longitudinal Survey of Scholastic Achievement : L. Govender.
- Register of Graduates : Y.T. Shapiro & J.J. Jacobs.
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PREFACE

Many countries are today showing a keen interest in the performance of their education and training systems. This interest is not purely academic, but arises from the realisation that the ability to compete in world markets is dependent upon of the quality of the human resources produced by education and training. Closely related to this is the demand that education and training systems should account for the large investment that is made in them and their products.

Various countries have been monitoring the performance of their education and training systems through periodic systemic studies. These studies look at several interrelated factors and the way they impact on the systems. Sometimes the studies are done on an international scale with international comparisons of learning and teaching outcomes as one of the objectives.

These studies have also led to the development and use of educational indicators to produce data that can be used to monitor progress and achievement. Many countries, especially First World countries where economic competition is probably the fiercest, use educational indicators to assess performance and to adapt educational policy where necessary to enhance performance.

South Africa is one of the few developing countries that participate in international comparative studies such as the Third International Mathematics and Science Survey. It is in the process of setting up quality assurance mechanisms, and has the capacity to develop a system of performance indicators.

The HSRC has valuable databases and educational information that could be used to develop a set of useful educational indicators – this series of publications is a first step in that direction. The present publication is one of the nine provincial reports that will be followed by a final national report. It is hoped that the series of publications will stimulate the national debate on quality assurance in education and provide useful information for decision makers and other stakeholders in the education and training system.

S.W.H. Engelbrecht

S.W.H. ENGELBRECHT
GROUP EDUCATION: HSRC

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BACKGROUND

School Register of Needs Survey (refer Chapter 1)

The School Register of Needs Survey was initiated as one of the foundations of the new government's commitment to equity in education provision and improving the quality of learning and teaching, and was conducted throughout 1996. The Department of Education awarded the tender to a consortium comprising the Human Sciences Research Council (HSRC), the Education Foundation and the Research Institute for Educational Planning (RIEP). This survey constitutes one of the most extensive data-gathering and information analysis projects in the country. Thirty-two thousand educational institutions in the country were located, visited and mapped. Every single school in the country was surveyed for its physical facilities, services, equipment and resources.

For the first time in the history of education in South Africa the Department of Education has a comprehensive database of every school in the country, its exact geographic location and the extent of the physical facilities, the condition of school buildings, services provided, equipment and resources available. Maps of school information from the survey have been produced on Geographic Information Systems computer technology.

Thematic maps and indicator maps have been prepared showing the exact geographic distribution of types of schools, schools with and without electricity, condition of buildings and so on. Schools in greatest need can be identified and prioritised. The Department of Education will link this database to other databases such as the Census 96, the annual school survey and the matric results. This will allow the spatial mapping to be linked to related issues of social context and learning outcomes.

The objectives of the project were to

- locate and map every educational institution in the country, including schools, early childhood centres, adult basic education centres and colleges falling under the administration of the departments of education. Private schools and early childhood centres were visited where their location was known.
- survey the physical facilities, condition of buildings, services provided, equipment and resources available at all schools and early childhood centres.

- establish the global position and map co-ordinates of each educational institution.
- establish a database of all school information collected.
- produce maps on a computerised Geographic Information System (GIS), reports and analysis for the departments of education.
- develop a computer-based map-viewing system for each provincial department to interrogate the data.
- develop the capacity within the education departments for data analysis, use of maps and computer mapping technology for planning.

Data were collected from every school by a fieldworker who filled in a standard questionnaire. The following information was included in the questionnaire: institutional information (e.g. school name, address, contact numbers, owner, funding); facilities (e.g. instruction areas, shelters, boarding facilities, toilets, sports facilities); provision of services (telecommunication, water, power supply, transport, roads); provision of furniture, equipment and resources (extent of resources and furniture); utilisation of facilities (e.g. other facilities used, other uses of facilities, platooning); and learner, educator and non-educator information (enrolment, post level of educators and non-educators). The information gathered on the above included details such as size or number of facilities, specific types of provisions, and so on.

The Research Institute for Educational Planning (RIEP) at the University of the Free State was responsible for the quality control of the data collected by the fieldworkers. A sample of 2% of each fieldworker's schools was revisited and resurveyed by the quality control team in each province.

Third International Mathematics and Science Study (TIMSS) (refer Chapter 2)

The Third International Mathematics and Science Study (TIMSS) was carried out under the auspices of the International Association for the Evaluation of Educational Achievement (IEA) in 1995. TIMSS involved 45 countries and over 500 000 learners. Under the guidance and management of the TIMSS Study Centre in Boston, USA, the programme's application in South Africa was managed by a TIMSS office in the Human Sciences Research Council, South Africa.

TIMSS measured learner achievement in Mathematics and Science internationally, and also investigated differences in curriculum and included alternative assessment options. Since the measurement of learner achievement in Mathematics and Science is often considered to be a measure of a nation's potential economic status, policy makers display a great deal of interest in TIMSS.

There were four major research questions guiding TIMSS:

- What are learners expected to learn?
- Who provides the instruction?
- How is the instruction organised?
- What have learners learned?

Achievement tests were developed collaboratively by the countries. The questions were reviewed, and various trials, and pilot and field studies run on them. About a third of the questions required the learners to write their own answers, rather than select their answers from multiple choice options. Data were also collected on a considerable number of contextual factors included in various questionnaires. These data were collected from principals, teachers, learners and education department officials and curriculum experts.

South Africa was the only country in Africa that took part in TIMSS. Two of the three phases/populations which were covered by the TIMSS internationally were tested in South Africa, these being Population 2 (Standards 5 and 6/Grades 7 and 8) and Population 3 (Standard 10/Grade 12). These populations were made up of a randomly selected national sample of schools, representative of all provinces, race groups, urban and rural communities. Standard 5 and 6 learners (numbering 4 491 and 5 301 respectively) completed the same questionnaire, aimed at the expected developmental level of a 13-year-old-child. Other questionnaires containing questions about socio-economic and demographic conditions, that have an impact on the teaching and learning of Mathematics and Science, were administered to Mathematics and Science teachers and school principals.

The Standard 10/Grade 12 learners who participated spanned some 150 classes. Standard 10/Grade 12 learners wrote a general paper containing Mathematics and Science questions and completed a questionnaire. Questionnaires on the prevailing socio-economic and demographic conditions were also sent to the school principal.

In addition to the achievement tests, performance assessment and questionnaires, detailed data on curriculum matters were collected. The curriculum was considered on various levels. The proposed new curriculum was measured against a set of international criteria by a local panel of highly qualified and experienced experts in Mathematics, Science and Geography. The implemented curriculum was gauged from the teachers' responses to the many questions in the questionnaires, particularly with reference to those learners they taught in classes sampled for TIMSS. The learner achievement of curriculum objectives was measured by the learner's performance on the tests.

Longitudinal Survey of Scholastic Achievement (refer Chapter 3)

This survey, initiated by the Human Sciences Research Council and recommended by the Department of Education, is based on the core curriculum for the subjects Mathematics, Science and English in South African schools and is designed to measure and interpret differences in educational systems in order to help improve the teaching and learning of the above subjects.

According to the new constitution, the government provides for nine years of free and compulsory schooling, therefore the emphasis is now on Grade 9 as an exit point in the South African education system. Since an important aspect of the South African Longitudinal Survey is the monitoring of educational results over time, this study involves assessment at Grade 9.

This makes it possible to compare the curricula, teaching practices and learner outcomes on a national level, as well as to assess the potential impact that alternative curricular offerings, teaching strategies and administrative arrangements have on learning. The survey also enhances the understanding of changes in learner attitudes and the relationship between the development of a positive attitude and to classroom practices.

The aims of the survey are threefold:

- To provide information on the level of knowledge and understanding of Mathematics, Science and the English language displayed by South African learners at the end of junior secondary education (Grade 9).
- To determine the extent of the relationship between the testees environment and test results.
- To investigate the impact of receiving instruction in a language different from the mother tongue (home language) on learner achievement.

The survey was conducted for the first time in 1995, then again in 1996 (with a 98% response rate, 25 000 learners participating), and it is envisaged to be conducted again in 1998. The major source of data on learner achievement was from achievement surveys containing multiple choice items selected on the basis of their relationship to the curriculum frameworks developed for the study. Tests were based on the core syllabi of Mathematics, Science and English for Grade 9.

A questionnaire designed to elicit information about learner background was included for descriptive comparisons. Each learner completed a learner questionnaire intended to give information regarding the socio-economic status and some indication of how the learner perceives the learning situation at school. This includes school and classroom variables such as school climate and opportunity to learn.

A random sample was drawn from schools that had more than 40 learners in Grade 9, and in the 1996 survey all the learners in Grade 9 in the sample schools were tested.

Overage learners (refer Chapter 4)

The percentages of "overage" learners according to grade are calculated on the assumption that learners who are three or more years older than the median age for the grade are considered over-aged. Learners in Grade 1 who are ten years or older are considered overaged for Grade 1, and so on. The median age for Grade 1 is thus 7 years and the median age increases with one year for each consecutive grade.

Overage learners are the result of very high repeater rates and the fact that many learners enter the school at a more advanced age. Not only could the older learner attending primary or secondary school have a negative influence on the discipline, but the fact of his/her more advanced age may also exert a negative influence on the development of a positive self-image, especially if the learner has to repeat certain grades.

The source from which the overage learners for 1995 were calculated was the enrolment per grade per age statistics of the Department of Education's publication Education Statistics June 1997.

Matriculation results (refer Chapter 5)

When one talks about matriculation results one refers to the Senior Certificate examination written at the end of the 12 year school level education phase (Grade 1 to Grade 12). The Senior Certificate can be achieved with or without university endorsement, which determines the level of tertiary training accessible to the learner. Each course offered by a tertiary institution has certain entry requirements as approved by the Department of Education.

The examination papers are provincially produced, standardised and marked, although in some instances provinces purchase examination papers from other provinces. The South African Certifying Council (SAFCERT) is involved in the evaluation of the papers to ensure that the standards are equal in all the provinces. Each provincial education department has its own internal examinators and moderators who generate, mark and check the examination papers. Independent external moderators of SAFCERT also check a sample of the marked papers.

Once approximately eighty percent of the raw marks obtained for the various examination papers have been captured on a specific computer system, the standardising process starts. The standardising – also known as the ogiving of the marks - is the process whereby the marks are adjusted. This process compares the marks for a subject to a five-year norm and recommends adjustments to give candidates a normal pass rate. Representatives of SAFCERT and the National Education Department are also present at each province's standardising meeting.

All results are processed on a specifically designed computer system in accordance with the rules and regulations laid down by the Department of Education. Provinces own the data they send to the Department of Education, which in turn uses the data to compile national statistics on the pass rate and prepares publications based on the information. Such data were the source of reference in this book.

Register of Graduates (refer Chapter 6)

International experience shows that a major factor in becoming a winning nation is the development of a skilled workforce. A particularly important group of people are graduates. Although graduates constitute a small component of the total workforce, their strategic importance is unquestioned and information about them is of great interest and value to a wide variety of people and organisations.

In co-operation with South African universities, the HSRC has maintained a Register of Graduates since 1965. At present the database contains biographical and educational information on approximately 470 000 individuals and the current addresses of some 300 000. This information is an extremely valuable resource, providing information for occupational and human resources analysis, as well as assisting planning or policy-making activities and supplying statistics for tracking trends. This enables the fullest possible utilisation of the information on high level human resources such as the number of people in South Africa with specific qualifications, their occupations, remuneration and demographic statistics. The register is being expanded to include technikon qualifiers as well as those from universities. It is being made more accessible to all stakeholders, and mechanisms are being established for regular contact with them. An annual publication, *The Graduate*, is sent to all 300 000 respondents (those who maintain contact with the register).

Variables on the register are: name, qualifications, institutions/universities attended, years in which obtained, date of birth/age, population group, gender, major fields of study, address, geographical region, nationality, occupation, year in which occupation was updated. Some of the above variables are confidential and only for use by the HSRC, while others are more generally available.

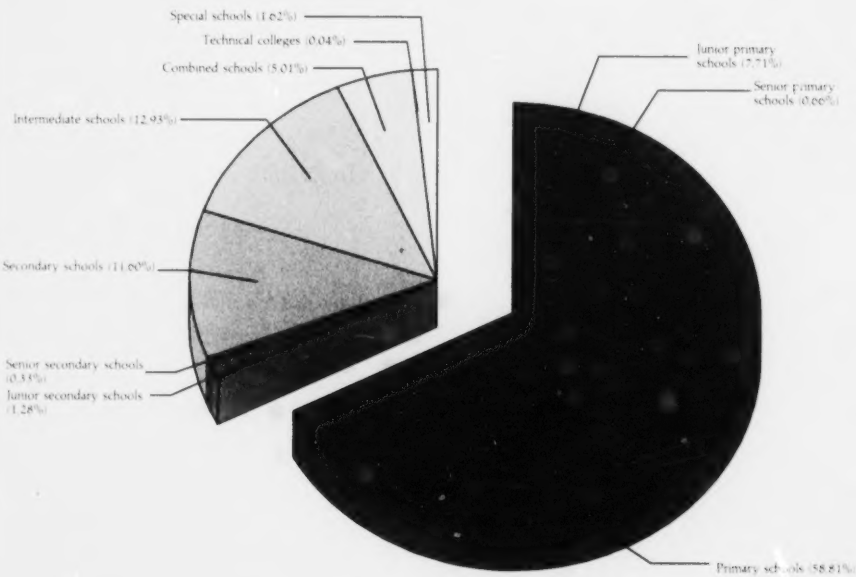
Two specific surveys are currently being done. The first is the Graduate Employment Survey which investigates the current occupations, employment status and incomes of graduates. The second is the First Employment Experiences of Graduates Survey which investigates the magnitude of unemployment and underemployment of graduates, what alternative routes they may follow, and factors influencing first employment trends.

SCHOOL REGISTER OF NEEDS SURVEY

1.1 Institutions according to level

In the North West province 2 413 schools were surveyed, comprising 8,9% of the national number surveyed. Of the schools in the North West province, 67,18% were primary school-level institutions, 26,14% were secondary-level schools, 5,01% combined schools, 0,04% technical colleges and 1,62% of the institutions in the North West province were special schools. Figure 1.1 shows details of the above breakdown for the North West province.

Figure 1.1 Institutions according to level



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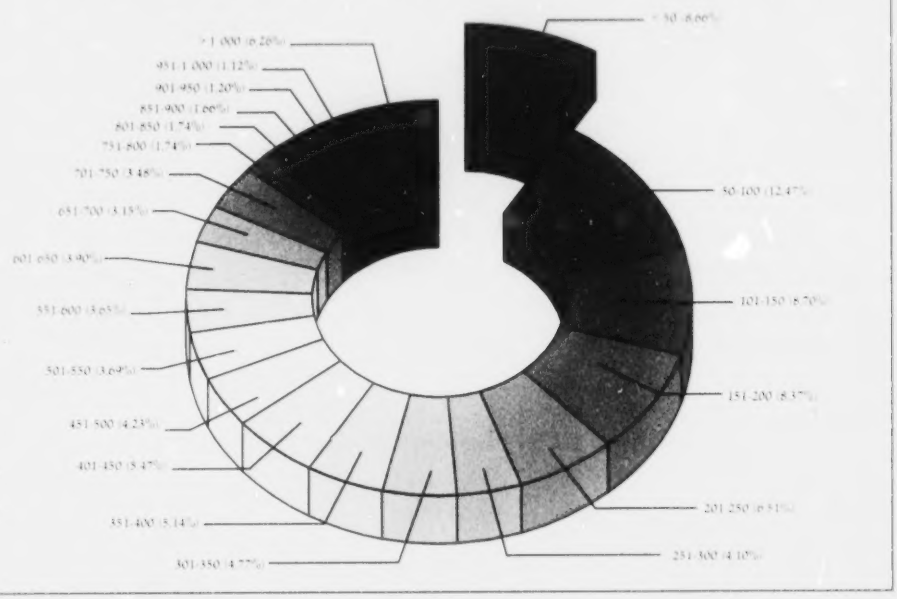
1.2 Schools* classified according to enrolment size

Figure 1.2 shows the percentages of schools per enrolment size, with the enrolment size categorised up into intervals of 50. As can be seen from the figure, at the time of the survey the bigger the enrolment, the smaller the percentage of schools with such enrolments, except for the category with more than 1 000 learners, where the percentage was 6,26%. At the lower end of the scale, 8,66% of the schools in the province had fewer than 50 enrolled learners, 12,47% had between 50 and 100 learners, and thereafter on the percentages decreased steadily.

Figure 1.2 Schools classified according to enrolment size



1.3 Learner enrolment according to grade

Figure 1.3, which shows the learner enrolment according to grade, reflects an interesting tendency in the earlier grades. Usually the enrolment for Grade 1 is substantially higher than that for Grade 2 owing to high repeater rates, but in this province this is not the case. At the time of the survey the enrolment for Grade 2 was higher than that of Grade 1, and, if one compares the Grade 2 enrolment with that of Grade 3, it shows that there was a high repeater rate for Grade 2 in the North West province. For the rest of the primary level grades there was a very good flow of learners through the various grades. The expected higher enrolment of Grade 8 which is usually due to high repeater rates for the first year of secondary schooling did occur.

* The term "school" used in the rest of this chapter refers to school level institutions, thus including formal schools and technical colleges (where information was available).

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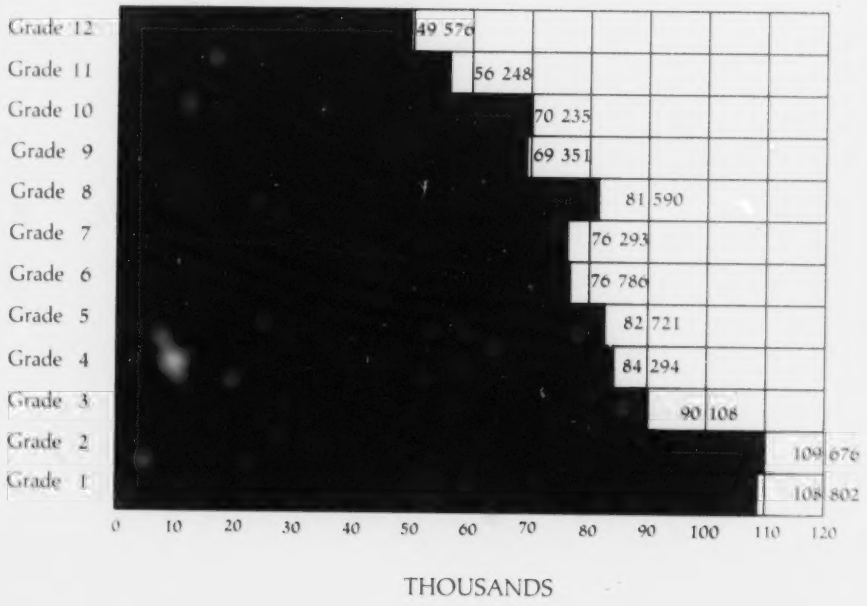
but there was also a generally good flow through the secondary grades, except for Grade 10 which had a slightly higher enrolment than Grade 9, thus implying a high repeater rate in Grade 10. The decline from Grades 8 to 10 was steeper than in the primary grades, but this is the accepted norm as learners exit the education system at various points to pursue further training in a specialised area or to enter the job market. The total number of learners surveyed in the North West province was 955 680, or 8% of the national number.

Figure 1.3 Learner enrolment according to grade



1.4 Educators according to rank of post

Figure 1.4 shows the distribution of members of staff over the various post ranks. A total of 32 425 staff members were surveyed in the North West province, which was 9,5% of the national number of posts surveyed. Educators comprised the majority of the staff complement as was expected (82,65%), with 8,25% of the staff in head of department posts, primarily also educators. Principals made up 7,1% of the staff, 1,14% staff members were in deputy principal posts, 0,85% in specialist educator posts, and 0,01% were psychologists with college/school (CS) qualifications. The National Commission on Special Needs in Education and Training stated that most of the learners in the system have some or other special educational need, but this survey showed at the ratio of specialist educators to learners for the North West to be 3 438:1, the fourth lowest in the country.

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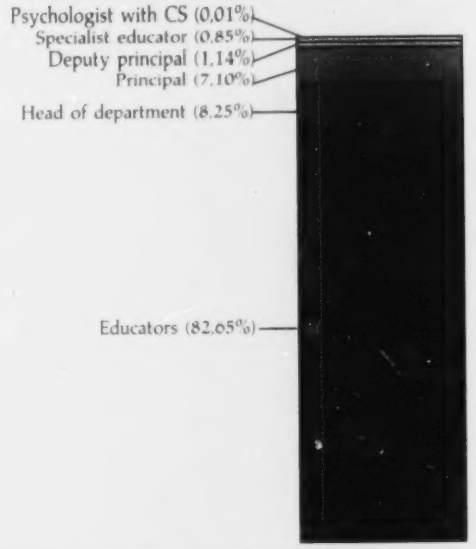
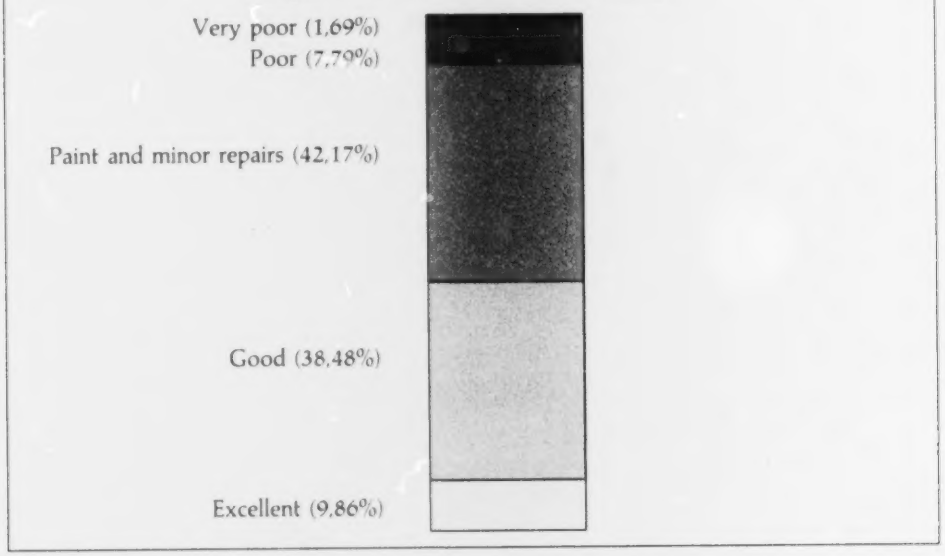
Figure 1.4 Educators according to rank of post



1.5 Condition of buildings

As can be seen from Figure 1.5 a large number of schools in the province had buildings which were in either a good or excellent condition (48,34%) at the time of the survey, but a further 42,17% needed paint and minor repairs. The percentage of schools with buildings in a poor condition was 7,79%, and at 1,69% of the schools in the province the buildings were in a very poor condition. Although the latter two percentages (poor or very poor condition) are not alarmingly high, they still represent 224 schools in the province which were considered unsuitable for learning.

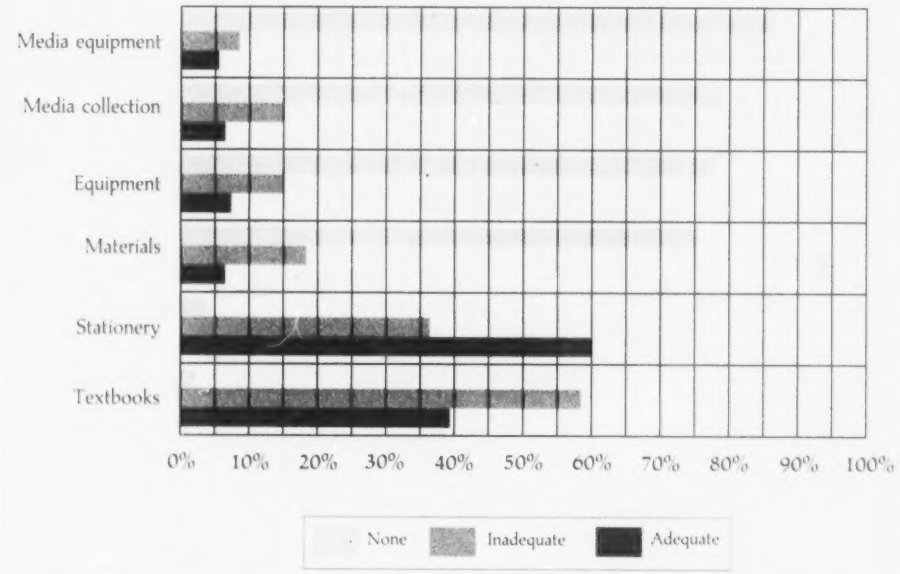
Figure 1.5 Condition of buildings



1.6 Provision of resources

For the purposes of this survey resources included media equipment, media collections, equipment, materials, stationery and textbooks. The provision of these resources in the North West province at the time of the survey is shown in Figure 1.6. Most schools lacked of the first four resources: 86% had no media equipment; 79% had no media collections; 78% had no general equipment, and 75% had no materials. Only between 7% and 5% of the schools had an adequate provision of the above resources, while the rest had an inadequate provision. The picture is slightly different with regard to stationery and textbooks: 60% of the schools were adequately provided with stationery, while 36% still had an inadequate provision and 4% or 86 schools had none. The survey found that 39% of the schools had an adequate provision of textbooks, while 58% reported an inadequate provision thereof. Only 2% of the schools did not have any textbooks, which still means that 50 schools had to cope with very difficult circumstances.

Figure 1.6 Provision of resources



1.7 Provision of furniture

Figure 1.7 shows the provision of various types of furniture and the percentages of schools with or without such furniture. The survey found that a large percentage of schools (36%) had no cupboards/cabinets for administrative use, 34% had an inadequate provision, and only 31% had adequate cupboards/cabinets. The provision of typewriters/computers for administrative use was similar: 44% of schools were

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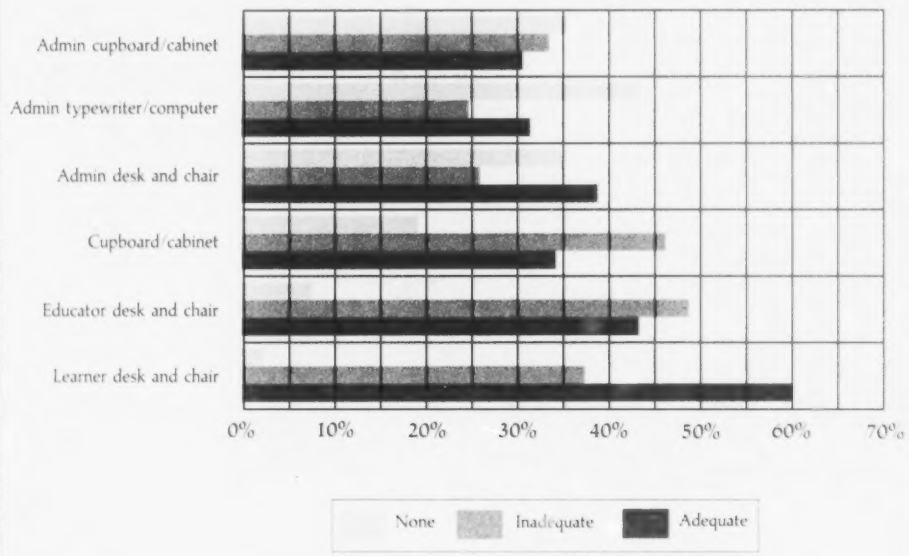
without any, 25% reported an inadequate provision, while 32% had an adequate supply. So too for desks and chairs for administration: 35% of the schools were found to be without any; 26% had an inadequate supply and 39% an adequate provision thereof. Thus it was found that there was a major shortage of various types of furniture for administrative use in approximately a third of the schools in the province, with approximately another third reporting an inadequate provision of such furniture.

With regard to classroom furniture, in a large number of schools (46%) cupboards/cabinets were inadequate, while another 19% were found not to have any. Cupboards/cabinets are important as materials, notes, equipment, and so on need to be stored safely, and a shortage of such furniture poses major practical problems. With regard desks and chairs for educators, at the time of the survey only 43% of the schools had an adequate provision, while 49% were inadequately supplied and 8% had none. Since a working surface for the teacher is of the utmost importance, such shortages pose serious difficulties for the educators. The survey found that 60% of the schools had adequate desks and chairs for learners, but 37% were inadequately stocked and 2% had none. This 2% implies that 47 schools had to function without any desks and chairs for the learners, making effective teaching virtually impossible. Paragraph 1.8 quantifies these shortages and gives a better reflection of the extent of the need.

Figure 1.7 Provision of furniture

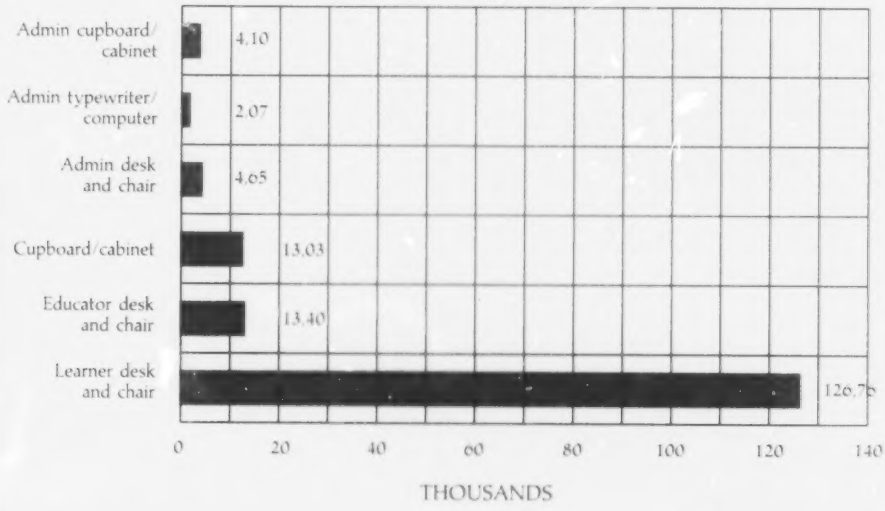


1.8 Shortfall of classroom and administrative furniture

Paragraph 1.7 gives the percentages of schools with shortages of furniture; this paragraph gives the actual figures, thus providing a different picture. From Paragraph 1.7 it would seem that desks and chairs for learners were the most adequately

supplied. However, if one considers the large percentage of schools with an inadequate supply and that a school needs a desk and chair for every learner compared with the small numbers of furniture for administration, then the picture changes quite considerably. As can be seen in Figure 1.8 the types of furniture most needed at the time of the survey were desks and chairs for learners (a shortage of 126 759), which implies that approximately this number of learners had no working surface when receiving instruction. The figure for desks and chairs for educators was also relatively high with a shortage of 13 398, and a further shortage of 13 032 cupboards/cabinets. With regard to administrative furniture, 4 648 desks and chairs, 2 068 typewriters/computers, and 4 098 cupboards/cabinets were needed. All the above items are of crucial importance for the successful functioning of and teaching in a school.

Figure 1.8 Shortfall of classroom and administrative furniture

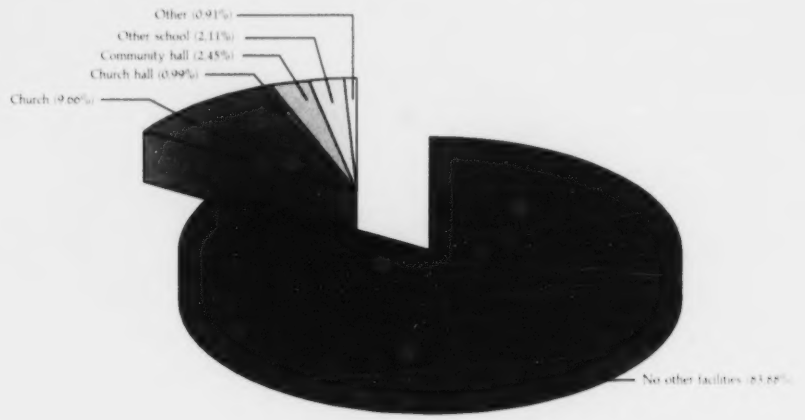


1.9 Other facilities used for instruction in the interim

At the time of the survey most of the schools (83,88%) did not utilise facilities other than a school. However, 9,66% used churches, 0,99% a church hall, 2,45% a community hall, 2,11% other schools, and 0,91% facilities other than those specified. Thus 16,12% or 389 schools used other facilities for instruction in the interim. Figure 1.9 shows this spread.

In the North West province 48 schools reported having double shifts as a form of platooning, while 93 schools shared their buildings with other schools in an effort to meet the educational needs in the province.

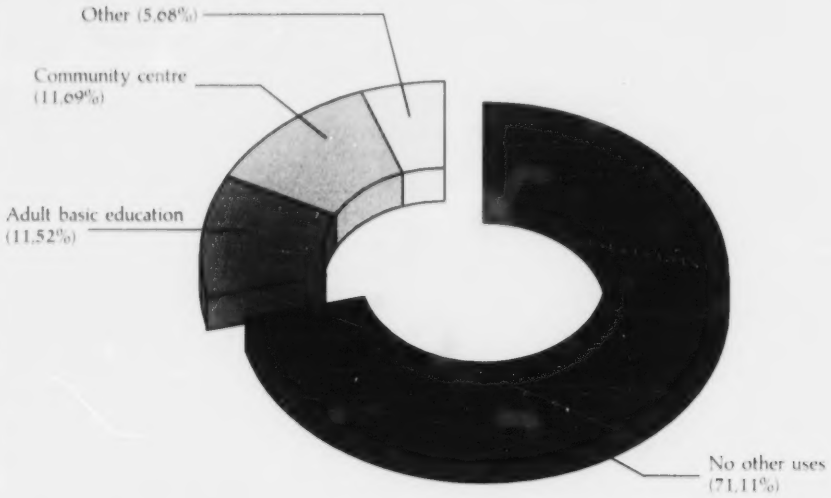
Figure 1.9 Other facilities used for instruction in the interim



1.10 Other uses of school facilities

Figure 1.10 shows that 28,89% of the schools in the North West province were used for purposes other than teaching only. Of the schools in the province 11,52% were used for adult basic education, 11,69% as community centres, and a further 5,68% for purposes not specified here.

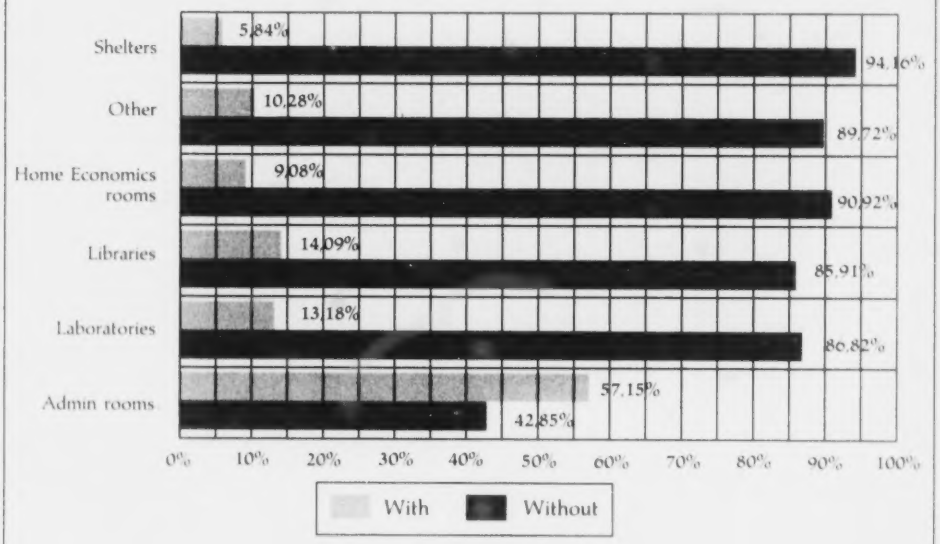
Figure 1.10 Other uses of school facilities



1.11 Facilities at schools

The results of the survey regarding facilities are shown in Figure 1.11: The facilities included shelters, Home Economics rooms, libraries, laboratories, administration rooms, and other unspecified facilities. At the time of the survey 141 of the schools in the North West province used shelters for instruction. With regard to the other facilities represented in Figure 1.11 it was found that most of the schools were without these specialised facilities: 42,85% lacked administrative rooms; 86,82% lacked laboratories; 85,91% had no libraries; 90,92% were without Home Economic rooms and 89,72% were without other facilities not specified here. The absence of such facilities makes practical work in certain subjects impossible and lowers the quality of education in such schools.

Figure 1.11 Facilities at schools

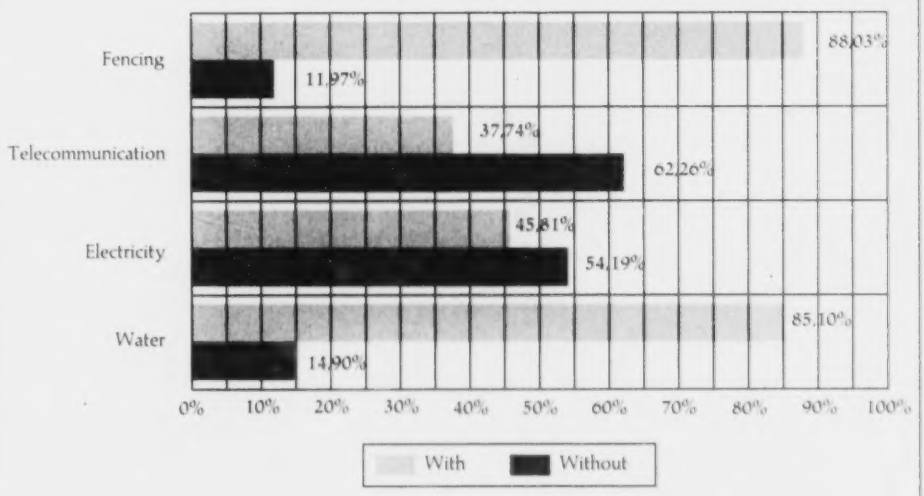


1.12 Water, electricity, telecommunication and fencing

The availability of certain services are crucial for maintaining a certain quality of education and for the effective functioning a school. Such services include water, electricity and telecommunication, while fencing is important as it demarcates the schools grounds and provides security. At the time of the survey, 14,9% (336) of the schools in the North West province were without water, 54,19% (1 222) were without electricity, 62,26% (1 404) were without telecommunication, and 11,97% (270) were without fencing. Figure 1.12 shows that a large number of schools did not have electricity, thus were unable to do practical work in a number of specialised school subjects. Furthermore, no electricity meant that often there was poor lighting in the

classrooms, and that the schools' capacity to move into the new computer-based era and adapt to innovations in teaching was limited. The availability and sourcing of water is discussed further in Paragraphs 1.13 and 1.14, but a large number of schools were found to have inadequate water provision. The schools without telecommunication facilities (1 404 schools) had to contend with limited contact with the authorities and other schools, and were thus disadvantaged in the effective running of the school. Most schools in this province (88,03%) had fencing around the school.

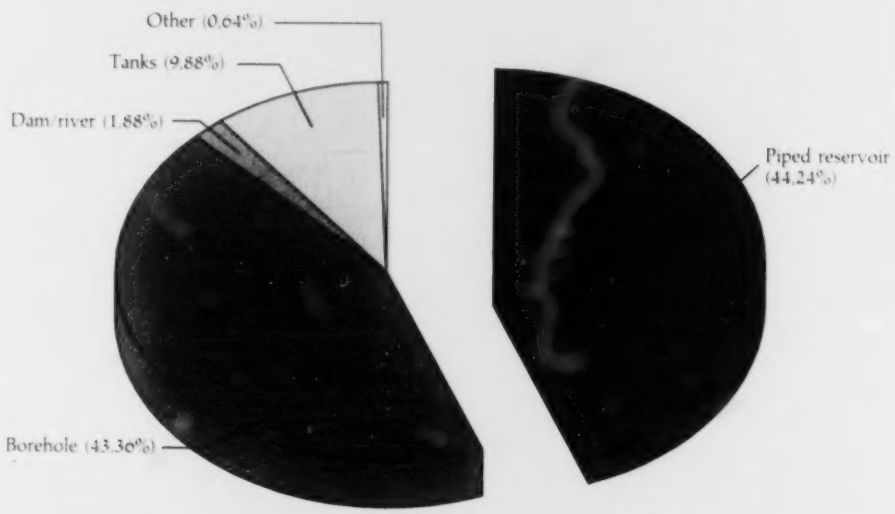
Figure 1.12 Water, electricity, telecommunication and fencing



1.13 Water sources

Figure 1.13 shows the various water sources utilised by the schools in the North West province at the time of the survey. Virtually equal percentages of the schools were supplied by piped reservoirs (44,24%) and boreholes (43,36%). The rest were supplied by dams/rivers (1,88%), tanks (9,88%) and other non-specified sources (0,64%). The use of water from dams/rivers or tanks poses a certain health risk to the learners.

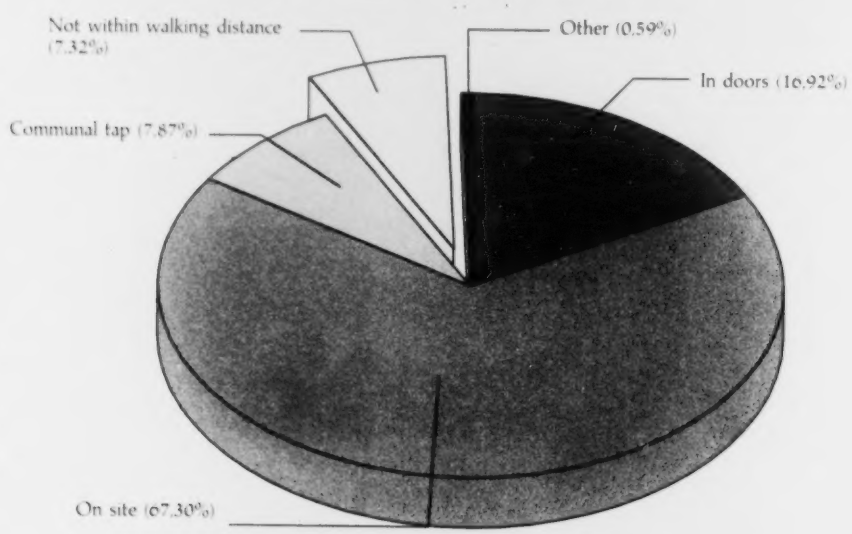
Figure 1.13 Water sources



1.14 Water availability

From Figure 1.14 one sees that 7,32% or 173 of the schools did not have water within walking distance. Of those that had water available, only 16,92% had it available indoors; 67,3% had it available on site; 7,87% had communal taps, and 0,59% had water available in a manner not specified. Thus the need for indoor water supplies was extreme as the lack thereof (83,08% of the schools) again limits practical classroom work.

Figure 1.14 Water availability

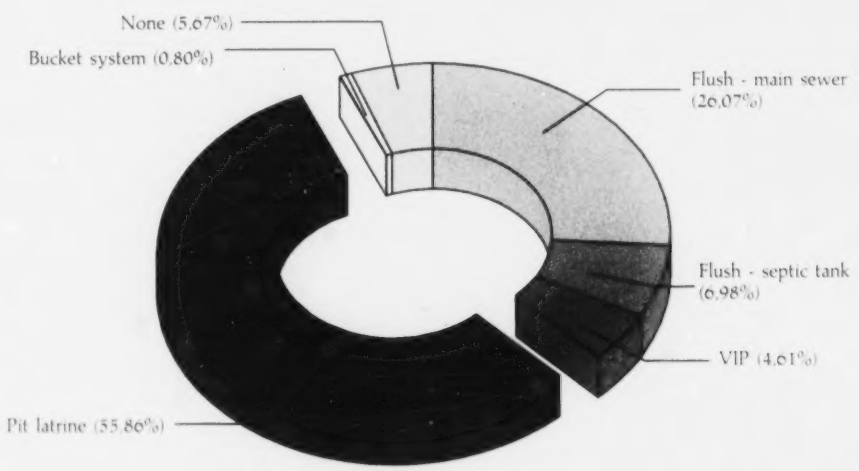


1.15 Provision of sanitation

The type of sanitation used by the largest percentage of schools at the time of the survey was a pit latrine (55,86%), as can be seen in Figure 1.15. A relatively high percentage (26,07%) used a flush system to a main sewer, with 6,98% using a flush system to a septic tank. A Ventilated Improved Pit latrine (VIP) was the type of toilet found at 4,61% of the schools, and 0,8% still used the bucket system. Unfortunately 5,67% or 134 of the schools did not have any sanitation. Learners at these schools had to leave the school premises to use a toilet at home or use the veld, a practice which offers no privacy. Failing these options, they had to refrain from going to the toilet during school hours which is extremely unhealthy.

The accepted norm for the learner:toilet ratio is two toilets for each instruction room, which translates to a ratio of twenty learners per toilet. In the North West province the learner:toilet ratio calculated over the whole province at the time of the survey was one toilet per 38,1 learners, which is just less than double the accepted norm. The fact that 5,67% of the schools did not have any toilets greatly influenced this figure, as these schools served 63 601 learners, thus 6,7% of the learners in the province had no access to toilet facilities on the school grounds at all. The number of learners with access to toilets was 892 079 (93,3% of the total learner enrolment of the province), serviced by 25 043 toilets, thus the learner:toilet ratio for those learners with access to toilets in the North West province was 35,6:1. This figure is also very high when compared with the accepted ratio. The staff:toilet ratio for this province was 7,1:1 which was high compared with the rest of the country, but was not much above that of the other provinces.

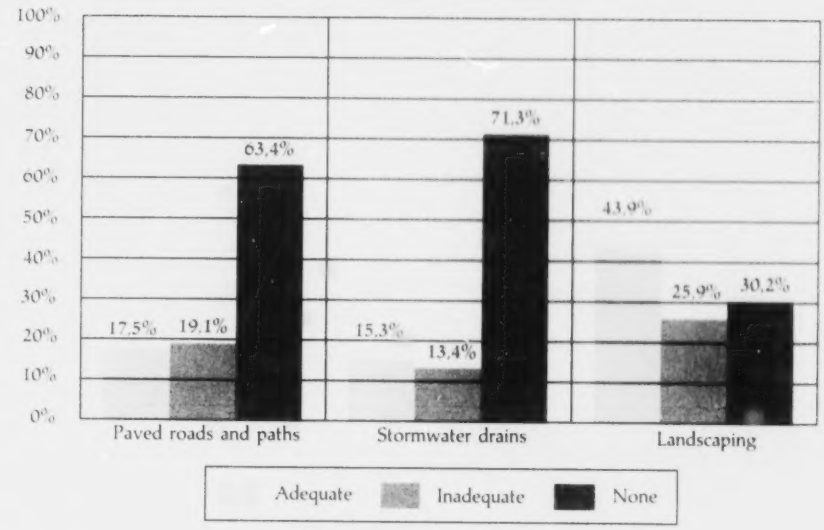
Figure 1.15 Types of toilets



1.16 Paved roads and paths, stormwater drains and landscaping

Improvements other than buildings and sport facilities which are considered in Figure 1.16 are paved roads and paths, stormwater drains, and landscaping. As can be seen, at the time of the survey very few schools had adequate roads or stormwater drains, 17,5% and 15,3% respectively. A small percentage had an inadequate provision, but large percentages had neither of these facilities: 63,4% had no paved roads and paths, and 71,3% had no stormwater drains. A smaller percentage had no landscaping (30,2%) with as much as 43,9% having adequate and 25,9% inadequate landscaping.

Figure 1.16 Paved roads and paths, stormwater drains and landscaping



1.17 Organised transport

Organised transport is considered as transport that has specifically been organised for the learners at the school ("school bus"). Of the schools in the North West province, 13,3% or 304 schools had such a facility.

1.18 Discussion of maps

The discussions (a) to (l) refer to Maps 1 to 12, drawn up from the School Register of Needs Survey data. Some of the issues discussed thus far, as well as some others are represented in these maps. Except for Map 1 data, the appendix gives the micro data per magisterial district that is portrayed in the maps discussed below.

(a) Population estimates for 1996 (Map 1)

Map 1 shows the population estimates for 1996 for the North West province and, as can be seen, the three districts which had the highest population were Klerksdorp, Odi I and Moretele, where the population was estimated to have exceeded 300 000 people. In Taung, Ditsobotla, Molopo and Potchefstroom the population was between 150 001 and 300 000 people, and the districts of Kudumane, Mankwe, Bafokeng, Rustenburg and Brits had populations of between 120 001 and 150 000 people. The population in all the other districts was below than 120 000 people. Thus the more densely populated areas were mainly in the north-eastern corner of the province, as well as in the south-eastern section. Except for four districts in the rest of the province, virtually all the districts to the west were less densely populated.

(b) Learner enrolment (Map 2)

It is expected that the learner enrolments shown in Map 2 should be similar to the population density shown in Map 1. This proved true for most of the districts in this province, save for Potchefstroom and the cluster of districts of Rustenburg, Bafokeng and Brits where the enrolments fell below the number expected. Such a trend usually indicates either a large number of out-of-school learners or migration of learners to other districts.

Generally, Klerksdorp, Moretele and Odi I (104 065 learners enrolled) had the highest enrolment figures, with more than 80 000 learners. Molopo, Disobotla and Taung had between 60 001 and 80 000 learners, while the districts of Potchefstroom, Mankwe and Kudumane had enrolments of between 35 001 and 60 000 learners. For the rest of the province the enrolments per magisterial districts were below 35 000. Refer to Paragraph 1.3 for more information on learner enrolment according to grade.

(c) Total number of primary and secondary schools (Map 3)

Again maps can be compared, this time the total number of schools per district as seen in Map 3 and the enrolment figures in Map 2. Although Klerksdorp had a very high enrolment figure, its total number of primary and secondary schools fell into the third interval, and Moretele, which also had a large number of learners enrolled, had its total number of primary and secondary schools in the second interval. The enrolment figures and number of schools in Odi I correlate well on both maps. However, Kudumane with a smaller number of learners compared with the other districts, had one of the highest number of schools (177 schools). Other districts in which the number of schools fell into a lower interval than the learner enrolments (although only one interval lower, thus it could not be considered a major indicator at this stage) were Rustenburg, Potchefstroom and Molopo. For the rest of the province the two maps were comparable.

In summary, two districts had more than 175 schools and a further three between 141 and 175 schools. Three had between 101 and 140 schools, and the rest of the

28 districts all had fewer than 100 schools. Refer to Paragraphs 1.1 and 1.2 for information on the number of institutions according to level and to enrolment size.

(d) Ratio of 5 to 14-year-old learners to the number of primary schools (Map 4) and average size of primary schools (Map 4a)

In Map 4 the ratio of 5 to 14-year-old learners to the number of primary schools is given, thus showing the average number of learners who should have been enrolled per primary school (unfortunately 5 year olds could not be excluded from this calculation). Map 4a shows the average size of primary schools based on actual enrolments. If, at the time of the survey, all learners of school-going age had been enrolled in the schools in the magisterial districts in which they lived, there should be a high correlation in the patterns of the two maps. A comparison of the two maps for the North West shows a very good correlation. When one compares the actual figures (refer to the appendix) of the two maps, the figures of very few districts differ by more than 50. In six districts (Bloemhof, Coligny, Lehurutshe, Schweizer-Reneke, Taung and Vryburg) the difference in the two maps was between 50 and 100, but that is still quite favourable. Except for Bloemhof, the ratio of 5 to 14-year-old learners to the number of primary schools was always bigger than the average size of the primary schools in these districts, possibly indicating a number of out-of-school youths. Although the difference between the two figures for Potchefstroom was above 100 (109), it was not excessively so. Here the ratio was once again bigger than the average size of primary schools, possibly also indicating out-of-school youths.

The two districts where there were large discrepancies between the ratio of 5 to 14-year-old learners to the number of primary schools (Map 4), and the average size of primary schools for the districts (Map 4a) were Moretele (783 compared with 589, which was a difference of 194) and Odi I (871 compared with 600, which was a difference of 271). As the ratio of learners to primary schools was higher than the average size of primary schools in both cases, it could possibly mean migration to other districts, but more than likely indicates a number of out-of-school youths.

(e) Learner:classroom ratio (Map 5)

As can be seen on Map 5 the learner:classroom ratio at the time of the survey was fair, although not extremely favourable for this province. The only district which had a ratio of more than 50:1 was Schweizer-Reneke (52:1), with Moretele, Lichtenburg, Christiana and Ganyesa having ratios of between 41:1 and 50:1. For the rest of the province the ratio is 40:1 or less, which is more acceptable.

(f) Classroom shortages in schools (Map 6)

Map 6 is closely related to Map 5, but shows the estimated classroom shortages in schools. The patterns differ slightly from those displayed in Map 5, owing to the absence of the cancelling effect of averages, since the shortages were calculated on an individual school basis and surpluses were omitted. The calculation of the classroom

shortages is given as an example of the information that may possibly be extracted from the available data. A large number of factors will have to be built into formulas to accommodate issues such as school specialisation, location of schools, learners with special education needs, and so on.

The calculation was based on the following assumptions:

- The "per square metres instructional area" available per learner – 1,4 square metres for a primary-level learner and 1,6 square metres for a secondary-level learner.
- A learner:classroom ratio of 40:1 for primary learners and 34:1 for secondary learners.
- Where the excess number of learners who could not be accommodated by the existing instructional area available did not exceed 12,5%, it was assumed that these learners could be accommodated within the existing classrooms.
- Only schools with a shortage of classrooms were taken into account. Surplus space, which may be used by nearby schools with shortages was left out, since this analysis will have to be done at a micro level.

At the time of the survey, districts with the biggest classroom shortages were Moretele and Odi I, which needed more than 300 classrooms each: Moretele 559 and Odi I 323. Although their learner:classroom ratios were not excessive (refer (e) above), there seems to have been a large number of out-of-school youths (refer (d) above), who probably contributed to this shortage. Furthermore, Taung, Kudumane and Ditsobotla were found to need between 201 and 300 classrooms each, and another six districts between 101 and 200 classrooms each. A further six districts were also found to be short of between 51 and 100 classrooms, with the rest needing less than 50 classrooms each. If one compares this map with Map 2 which shows learner enrolment, one sees that many of the districts with greater shortages of classrooms tend to have greater enrolments.

(g) Learner:educator ratio (Map 7)

According to Map 7 the survey found the learner:educator ratio to be between 36:1 and 40:1 in Bloemhof, Wolmaransstad and Schweizer-Reneke. In another nine districts, mainly in the southern and western parts of the province the ratio was between 31:1 and 35:1. Interestingly enough Kudumane, which had registered various needs in the previous sections, had a ratio of 29:1. The other districts with ratios of 30:1 or less were generally situated in the central and northern sections of the province. Thus the ratios were not too high in this province, although there was a definite need in some districts. Also refer to Paragraph 1.4 for information on educators according to rank of post.

(h) Primary:secondary learner ratio (Map 8)

Map 8 shows the primary:secondary learner ratio, and the lower the ratio generally the better off the province is with regard to the flow of learners from the primary to the secondary phase. As can be seen from the map at the time of the survey only one district, Delareyville, had a ratio of 4:1, and in another seven districts the ratio was 3:1, but for the rest of the province the ratio was 2:1 or less, which is generally very favourable. Thus, except for Delareyville, there seems to have been a favourable flow from the primary to the secondary phase in the North West province. Refer to Paragraph 1.3 for learner enrolment according to grade.

(i) Percentages of schools in a poor and very poor condition (Map 9)

The percentages of schools in a poor and very poor condition are presented in Map 9.

The fieldworkers collected information on the condition of school buildings according to five categories:

- Very poor – these structures posed a threat to the safety of learners and were considered unsuitable for education.
- Poor – these had structural faults in some buildings, such as walls crumbling, roof caving in, and so on.
- Needs paint and minor repairs – these included doors and windows missing, crumbling plaster, broken toilets.
- Good condition.
- Excellent condition.

As can be seen on the map Schweizer-Reneke once again emerges as the district with a specific need with 28% of its schools having been found to be in a poor or very poor condition at the time of the survey. In the Ganyesa district the situation was similar with 23% of the schools in such a condition. In Kudumane, which has also emerged with other specific needs, 11% of the schools were in a poor or very poor condition, and a further nine districts in the central section of the province also had between 10,1% and 15% of their schools in such a condition. The rest of the districts had 10% or fewer of their schools in a poor or very poor condition. Four districts did, however, not have any of their schools falling into the categories of poor or very poor. These were Bloemhof, Christiana, Coligny and Madikwe. Once again this province was found to be not too badly off when one considers the condition of the school buildings, but there was some need. Also refer to Paragraph 1.5 on the condition of buildings.

(j) Percentages of schools without water facilities (Map 10)

As can be seen from Map 10 on the lack of water facilities at schools in the province, at the time of the survey the districts that had the largest percentages of schools without water (between 25% and 30%) were Schweizer-Reneke and Koster, with a

further seven districts in the centre of the province having between 10% and 15% of their schools without water. The rest of the province had 10% or fewer of their schools without water. It is interesting that all the districts to the west of the province had 10% or fewer of their schools without water, thus they were generally better off. The situation was similar in the north-eastern corner of the province. Also refer to Paragraphs 1.12 and 1.13 on the availability of water, as well as water sources.

(k) Percentages of schools not wired and supplied with electricity (Map 11)

Map 11 shows the percentages of schools not wired and supplied with electricity at the time of the survey. Here the percentages of schools without the facility are much higher than for water. In the districts of Lehurutshe, Ventersdorp, Madikwe and Ditsobotla between 70% to 80% of the schools were without electricity, while a further eight districts had between 60,1% and 70% of their schools without electricity. Six districts had between 50,1% and 60% of their schools without electricity, and the rest of the province had fewer than 50% of their schools without electricity. The district which had the smallest percentage of schools without electricity was Rustenburg, which was nonetheless 16%. Thus generally speaking it would seem that electricity is a major need in this province: the map shows virtually the whole of the central and western parts to be in need of electricity at large percentages of schools. The lack of electricity not only makes practical work in all relevant subjects impossible, but also means inadequately lit classrooms, and non-availability of teaching aids (like overhead projectors, etc.), and prohibits access to computerised systems. Also refer to Paragraph 1.12 on the availability of electricity and other facilities.

(l) Percentages of schools without telephones (Map 12)

The percentages of schools without telephones at the time of the survey are given in Map 12. The three districts with the largest percentages of schools (more than 80%) without telephones were Kudumane, Ganyesa and Delareyville in the western part of the province, with Koster, Moretele and Mankwe in the east having between 70,1% and 80% of their schools without telephones. For most of the other districts between 50% and 70% of the schools were without telephones, and in only Brits, Rustenburg, Swartruggens, Potchefstroom, Klerksdorp, Bloemhof and Christiana fewer than 50% of the schools did not have telephones. Thus the telephone would seem to be a facility greatly lacking in most districts. This causes communication difficulties for most schools and hampers effective management of the schooling system in the province. Also refer to Paragraph 1.12 on the availability of telecommunications to schools, compared with other facilities.

THIRD INTERNATIONAL MATHEMATICS AND SCIENCE STUDY (TIMSS)

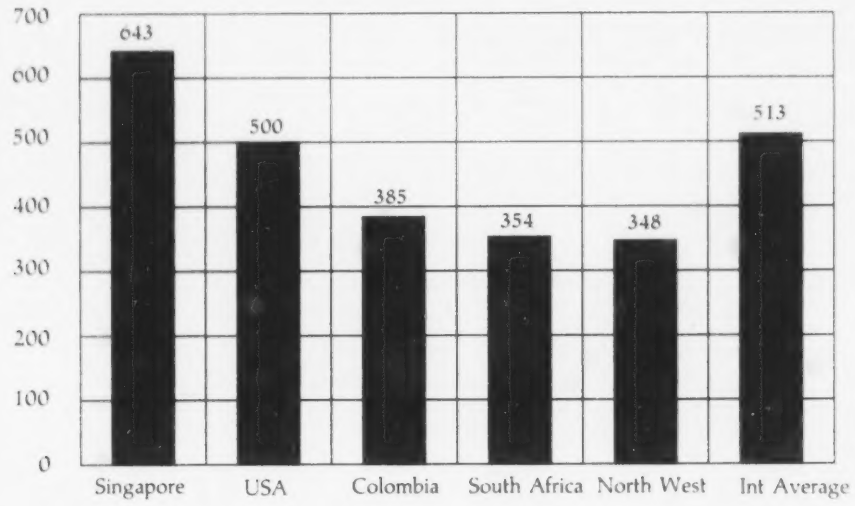
The learners' performance in the TIMSS tests was measured on an 800-point scale for each country. In the subsequent sections the average performance in Mathematics and Science of learners in the North West is compared with that of the South African national average, as well as the averages of selected countries and the international average. The countries selected (Singapore, USA, Colombia) are some of those in which learners performed well, average and below average respectively.

2.1 North West, national and international achievements at Standard 6 level in Mathematics

Figure 2.1 illustrates the North West learners' performance in Mathematics for the Standard 6 age group. This performance is compared with the national and international averages, as well as with the averages of the three selected countries.

From Figure 2.1 it can be seen that the North West learners scored slightly below the national average in Standard 6 Mathematics with 348 points compared with 354 points. This was still well below the international average of 513.

Figure 2.1 North West, national and international achievements at Standard 6 level in Mathematics



2.2 North West, national and international achievements at Standard 5 level in Mathematics

Figure 2.2 illustrates the North West learners' performance in Mathematics for the Standard 5 age group. This group's performance is compared with the national and international averages, as well as with the averages of three selected countries.

From Figure 2.2 it can be seen that the North West learners scored 354 points which is somewhat higher than the national average of 348, and is also higher than the North West Standard 6 average. The main reason for this is that two of the Standard 5 classes (out of thirteen classes) were from more privileged schools, whereas all the Standard 6 classes were from disadvantaged schools. The international average was 484 points.

Figure 2.2 North West, national and international achievements at Standard 5 level in Mathematics

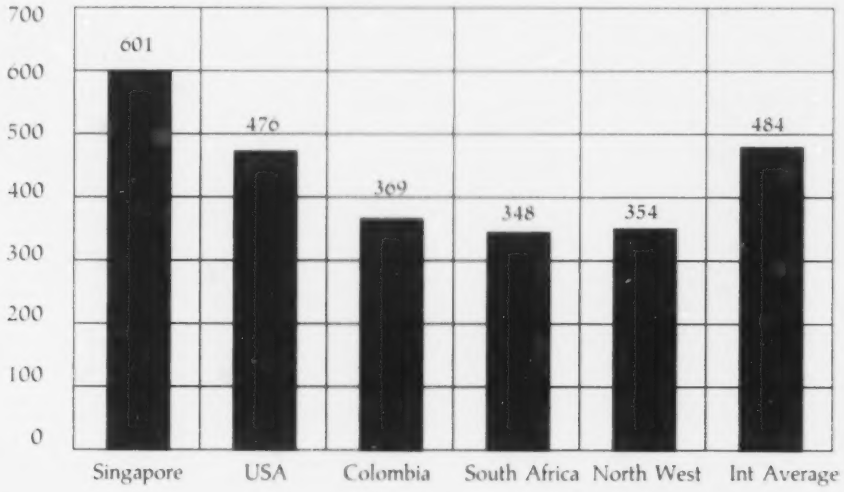


Table 2.1 illustrates the range of scores measured for learner achievements in the TIMSS Mathematics tests in the North West province.

Table 2.1 Learner achievement in TIMSS Mathematics questions in the North West province

Year level	Number of learners who participated in the North West	Average score achieved in Mathematics	Minimum score recorded	Maximum score recorded	Standard deviation
Standard 5	540	354	154	577	61
Standard 6	502	348	196	490	47

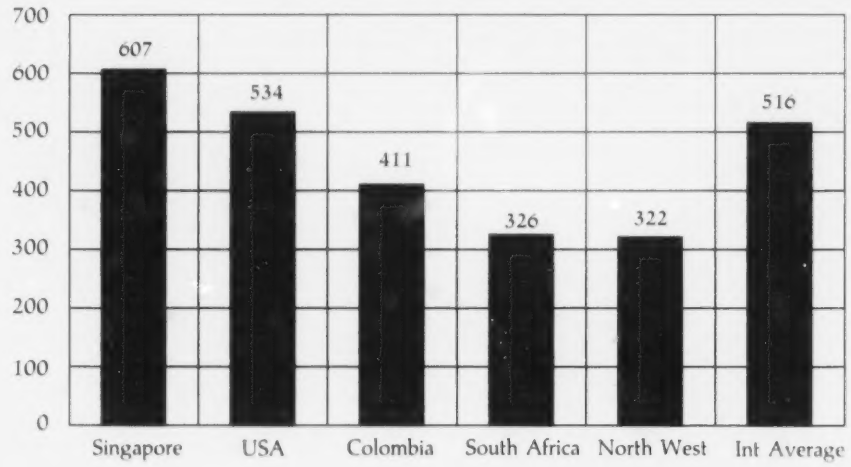
Although the average scores for Standard 5 and Standard 6 were low, it can be seen that there were some learners in the North West sample who scored above the international averages. See Paragraph 2.5 for further comment on this table.

2.3 North West, national and international achievements at Standard 6 level in Science

Figure 2.3 illustrates the North West learners' performance in Science for the Standard 6 age group. Again this group's performance is compared with that of selected countries and the national and international averages.

From Figure 2.3 it can be seen that the North West learners scored 322 points, which is about the same as the national average of 326. The international average was 516 points.

Figure 2.3 North West, national and international achievements at Standard 6 level in Science



2.4 North West, national and international achievements at Standard 5 level in Science

Figure 2.4 illustrates the North West learners' performance in Science for the Standard 5 age group. Again their performance is compared with the national and international averages as well as with the averages of three selected countries.

From Figure 2.4 it can be seen that the North West learners scored 327 points for Standard 5 which was 10 points above the national average of 317. The international average was 479 points.

Figure 2.4 North West, national and international achievements at Standard 5 level in Science

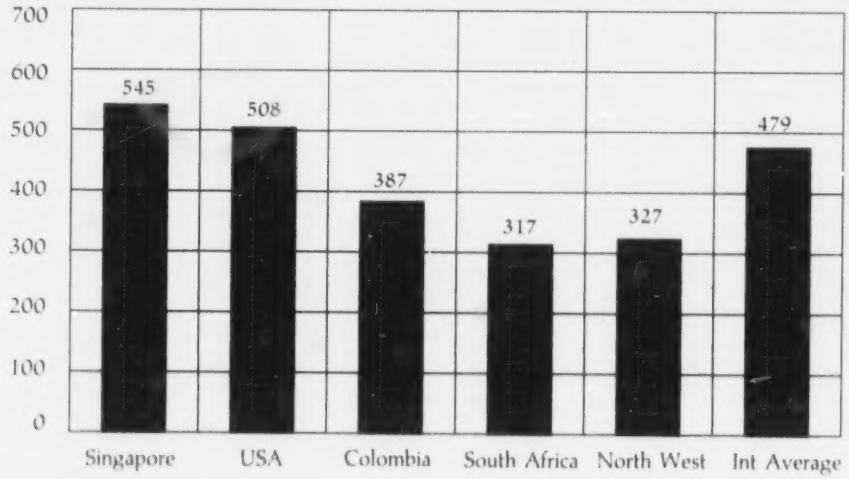


Table 2.2 illustrates the range of scores measured for learner achievements in the TIMSS Science tests in the North West.

Table 2.2 Learner achievement in TIMSS Science questions in the North West province

Year level	Number of learners who participated in the North West	Average score achieved in Science	Minimum score recorded	Maximum score recorded	Standard deviation
Standard 5	540	327	50	595	86
Standard 6	502	322	75	554	68

Although the average scores for Standard 5 and Standard 6 were low, it can be seen that there were some learners in the North West sample who scored above the international means. See Paragraph 2.5 for further comment on this table.

2.5 Comments on scores in Mathematics and Science for the North West

- At first sight it is surprising that the Standard 6 averages in the North West province for both Mathematics and Science are lower than their Standard 5 counterparts. However, the reason is quite simple – the sample of thirteen Standard 5 schools included two schools from privileged communities, which account for the high scores, whereas all the Standard 6 schools were from disadvantaged areas. When the scores of the two privileged schools are removed from the sample, the averages for both Mathematics and Science fall significantly below those for Standard 6.

- A comparison was made between the Mathematics and Science scores from disadvantaged schools in all provinces, on a school by school basis. This comparison shows that the North Wests' disadvantaged schools performed significantly better on average than those in other provinces, especially in Science.

- Another method of comparing the North West learners with their national and international counterparts is shown in Table 2.3. In this table the percentages of North West learners scoring above or below certain benchmarks are shown.

Table 2.3 Percentages of North West province learners scoring above or below certain benchmarks

	Mathematics Standard 5	Mathematics Standard 6	Science Standard 5	Science Standard 6
Percentage of North West learners scoring above the international average	1,7	11,9	5,3	20,2
Percentage of North West learners scoring above the national average	50,1	69,1	65,8	82,1
Percentage of North West learners scoring below 250 points	2,3	-	11,6	3,6
Percentage of South African learners scoring below 250 points	4,5	3,8	23,4	23,3

- In both Standards 5 and 6, the performance in Mathematics was noticeably better than in Science as was the case for the national sample as a whole. However, for the best performing schools the Science scores tended to be better than the Mathematics scores.

2.6 Comments on learners' backgrounds in the North West

Questionnaires requesting background information were completed by all learners. At a later stage responses to the questionnaires will be analysed in some detail for each province, so that it can be ascertained which factors covered by the questionnaire are related to the test results.

A preliminary analysis of some of the questionnaire responses is given below.

- The fact that the language of instruction is often not the home language is an issue of considerable importance in South African education. In the North West province the Standard 5 learner questionnaire returns revealed that 20,2% of the learners use the language of instruction at home always or frequently. Only 19,3% of learners claimed never to use the language of instruction at home. The remaining 60,5% of the learners used the language of instruction at home occasionally. In contrast only 4,3% of learners in Standard 6 claimed to use the language of instruction at home always or frequently. The language of instruction was claimed to be used occasionally in their homes by 80,4% of the learners. This difference in language use in learners may, to some extent, explain the inversion of achievement scores between the two standards. The fact that all the schools in the Standard 6 sample were from disadvantaged communities largely explains the low percentage of those who always or frequently used the language of instruction at home.

- With regard to household services such electricity supply, which influences the learners' opportunities to learn just over half the sampled learners had this facility in their homes. Only two provinces showed a lower level of access to electricity. This must be regarded as a factor influencing the learners' achievement since their opportunities to learn at home are curtailed.

- For Standard 5, 92% of the learners claimed to receive Mathematics homework always or regularly and 86% claimed that the educator regularly checked it. In the case of Science, 84% of Standard 5 learners received homework always or frequently and 86% said that it was checked regularly. These figures are higher than the national average. The Standard 6 learners received more regular Mathematics homework (90%) than they did in their Science classes (83%).

- The learners' attitude towards Mathematics showed that in Standard 5, 87% enjoyed Mathematics and 88% enjoyed Science. In Standard 6, 88% of the sample enjoyed Mathematics and a similar proportion indicated that they also enjoyed Science.

- The educational level attained by the parents in the North West sample of learners showed that 21% of the Standard 5 mothers had received comparatively little education (incomplete secondary school or less), while for the fathers this figure was 15,5%.

- For the Standard 5 sample, just over 25% of both parents were reported as having received a complete secondary school education and vocational training. Of the mothers 29% and 28% of the fathers were reported to have received complete or partial tertiary education. The Standard 6 sample indicated that their parents had achieved similar education levels with the exception of the mothers apparently having achieved less education at the complete secondary school level and more of them having failed to complete secondary school (36%). The returns for this question were characterised by a substantial number of "don't knows".
- The importance attached to doing well in Science showed an increase in Standard 5 compared with Standard 6, (86% to 89%). The percentage for Mathematics (88%) is the same for both standards.

LONGITUDINAL SURVEY OF SCHOLASTIC ACHIEVEMENT

The Longitudinal Survey of Scholastic Achievement is a unique South African component of the TIMSS (Third International Mathematics and Science Study). The Longitudinal Survey of Scholastic Achievement aims to provide information on the level of knowledge and understanding of Mathematics, Science and the English language. The tests were based on the core syllabi of the subjects for Grade 9.

A total of twelve schools that included 521 learners participated in the Longitudinal Survey of Scholastic Achievement in the North West province during 1995. The number of items tested per subject was as follows:

Subject	Number of items
Mathematics	30
General Science	50
English	50

The means achieved in the tests for the three subjects are given according to province in Table 3.1.

Table 3.1 Means per subject per province

Province	Mathematics	Science	English
Eastern Cape	14,98	19,73	24,50
Free State	12,16	17,49	19,26
Gauteng	14,38	20,97	27,02
KwaZulu-Natal	14,53	18,48	23,13
Mpumalanga	12,36	17,79	21,04
North West	**13,45**	**19,22**	**23,93**
Northern Province	10,38	15,81	15,76
Western Cape	17,82	23,63	34,50

(Remark: Two schools were drawn as part of the sample for the Northern Cape. However, due to logistical problems, tests were not conducted at both these schools therefore the Northern Cape has not been included in this table.)

It is clear from Table 3.1 that the learners in the North West province had the fourth lowest mean for Mathematics and the fourth best means for Science and English in the country. It is interesting to compare the 1995 Grade 12 pass rates by province (Table 3.2) with the results of the tests conducted during the Longitudinal Survey of Scholastic Achievement.

Table 3.2 Grade 12 pass rates per province (1995)

Province	(%)
Eastern Cape	48
Free State	51
Gauteng	64
KwaZulu-Natal	77
Mpumalanga	42
North West	**67**
Northern Cape	75
Northern Province	39
Western Cape	84

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As can be seen, there is a close correlation between the means for Mathematics, Science and English at Grade 9 level and the Grade 12 examination pass rates. This association becomes more apparent when the rank orders are compared with one another in Table 3.3.

Table 3.3 Rank orders per subject per province

Province	Difference in ranks	Ranks Grade 12	Average ranks for Grade 9	Mathematics	Science	English
Eastern Cape	3,3	6	2,7	2	3	3
Free State	2,0	5	7,0	7	7	7
Gauteng	1,3	4	2,7	4	2	2
KwaZulu-Natal	2,3	2	4,3	3	5	5
Mpumalanga	1,0	7	6,0	6	6	6
North West	**1,3**	**3**	**4,3**	**5**	**4**	**4**
Northern Province	0,0	8	8,0	8	8	8
Western Cape	0,0	1	1,0	1	1	1

The difference between the average rank for the three subjects and the Grade 12 pass rate for the North West province was 1,3, which is the third lowest difference, compared with the other provinces. The results at the end of Grade 12 seem to be determined by performance in previous years, in this case, Grade 9. The results of the achievement tests in Mathematics, Science and English seem to be a good predictor of future achievement.

Some of the socio-economic variables for which data were also collected, were the availability of electricity, running water in the house, water-borne sewage and a separate bedroom for the learner.

The responses to these questions are presented in Figures 3.1 to 3.4.

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Figure 3.1 Percentage learners in the sample without electricity at home

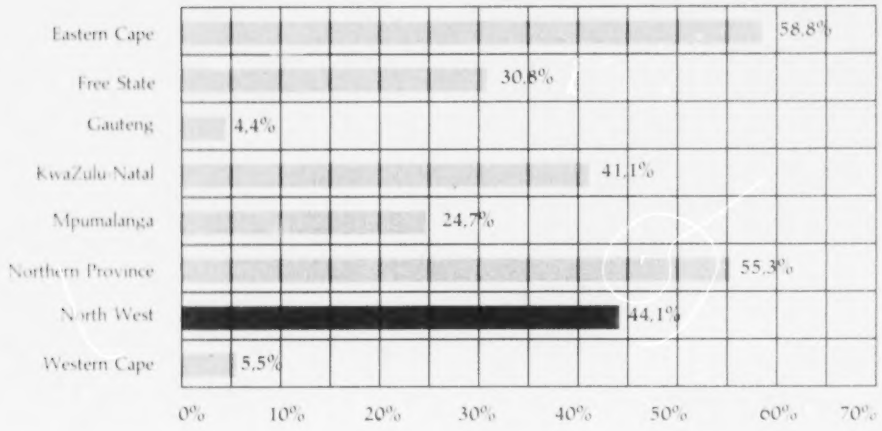


Figure 3.2 Percentage learners in the sample without running water in the house

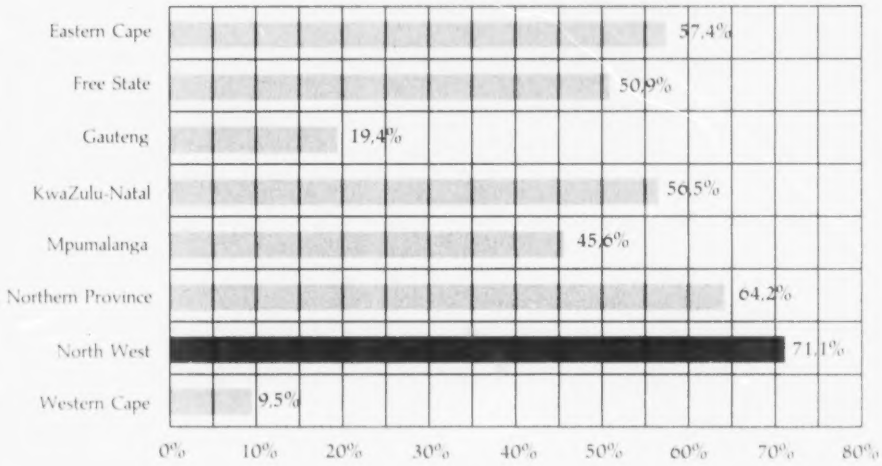


Figure 3.3 Percentage learners in the sample without their own bedroom

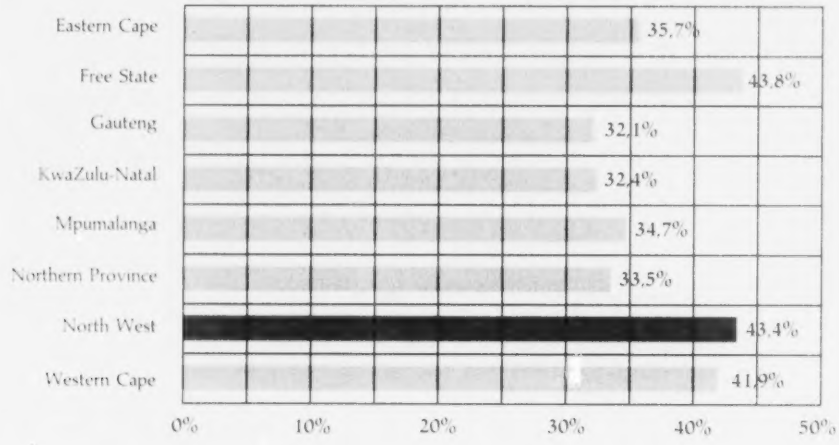
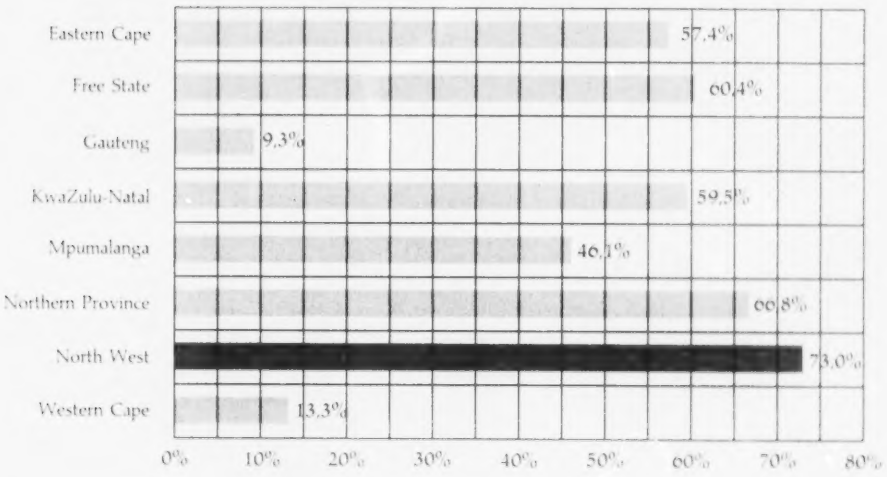


Figure 3.4 Percentage learners in the sample without flushing toilets at home



In terms of an electricity supply at home, the learners in the North West were the third worst off – 44,1% of the learners did not have electricity at home. Of the sampled learners in the North West, 71,1% did not have running water in the house, placing them in the worst position compared with the other provinces. The North West had the second worst percentage (43,4%), of learners who did not have their own bedrooms at home. Almost three-quarters of the sampled learners (73,0%) were without flushing toilets at home, which placed them in the worst off position, compared with the samples in the other provinces.

The ranking of the responses regarding the lack of these facilities are given according to province in Table 3.4.

Table 3.4 Response rankings on lack of facilities

Province	Without electricity	Without running water	Without own bedroom	Without flushing toilets	Average rank for variables
Eastern Cape	1	3	4	5	3
Free State	5	5	1	3	4
Gauteng	8	7	8	8	8
KwaZulu-Natal	4	4	7	4	5
Mpumalanga	6	6	5	6	6
North West	**3**	**1**	**2**	**1**	**1**
Northern Province	2	2	6	2	2
Western Cape	7	8	3	7	7

For each variable the percentage of learners without these facilities was ranked from highest to lowest, with the highest percentage receiving a rank of 1. An average rank was calculated and this was then also ranked. The digits in the last column represent the final rankings.

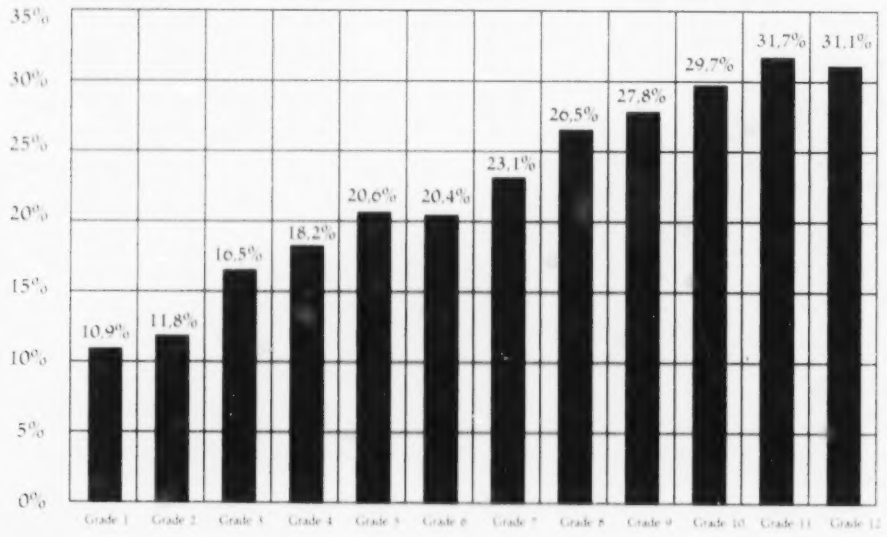
When the final rankings are considered they indicate a close relationship with achievement scores for Mathematics, Science and English. The higher the percentage of learners without the facilities, which indicates low economic status, the greater the decrease in achievement scores.

OVERAGE LEARNERS

If the national average per capita expenditure of R2 277,00 (EduSource Data News, September 1996) is used, the financial burden of overage learners in the North West will amount to R431,0 million. (189 274 overage learners x R2 277,00).

It is clear from Figure 4.1 that according to the 1995 data the percentage of overage learners increased for each consecutive grade, except for Grades 6 and 12, where there were slight decreases. Except for Grades 1 and 2 the percentage overage learners for the primary grades approached or exceeded 20%. In the secondary grades more than 26% of all learners were overage for the grade in which they were enrolled. It is clear that many learners in the North West repeat grades and the problem is aggravated in higher grades.

Figure 4.1 Overage learners according to grade (1995)



MATRICULATION RESULTS (1996)

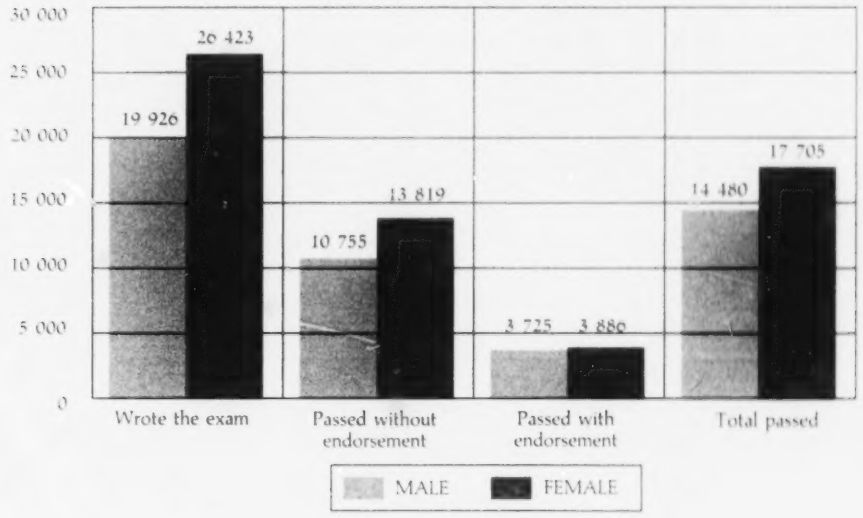
The matriculation examination pass rates for the North West are given in Table 5.1 and the results according to gender of full-time learners who wrote six or more subjects are shown in Figure 5.1.

Table 5.1 Matriculation pass rate for the North West province (1996)

Province	Percentage of candidates who passed			
	Without endorsement	With endorsement	Total passed	Rank
Eastern Cape	38,3	10,6	48,9	7
Free State	39,2	11,8	51,1	6
Gauteng	38,8	18,9	57,8	5
KwaZulu-Natal	38,5	23,1	61,7	4
Mpumalanga	36,9	10,4	47,3	8
Northern Cape	55,8	17,2	73,0	2
Northern Province	30,3	7,4	37,7	9
North West	**53,0**	**16,4**	**69,4**	**3**
Western Cape	45,4	34,8	80,2	1
RSA	38,5	15,4	53,8	-

The North West province is ranked third in overall pass rate when compared with the other provinces. The difference between the North West's percentage pass rate and that of the province ranked first is 10,8%.

Figure 5.1 Number of full-time candidates who wrote six or more subjects according to gender – Matriculation examination 1996



Source: 1996 examination results, Department of Education

The above figure shows that more females than males wrote the examination and the pass rates, show that more females than males passed with and without endorsement, thus the number of females who passed exceeded the total for the males.

A comparison of the total number that passed (32 185) with the number that wrote the examination (46 349) shows that 69,4% of the learners passed. Of the males who wrote the examination 72,7% passed, while 67,0% of the females that wrote passed. Of the learners that wrote the examination 53,0% passed without endorsement and 16,4% with endorsement.

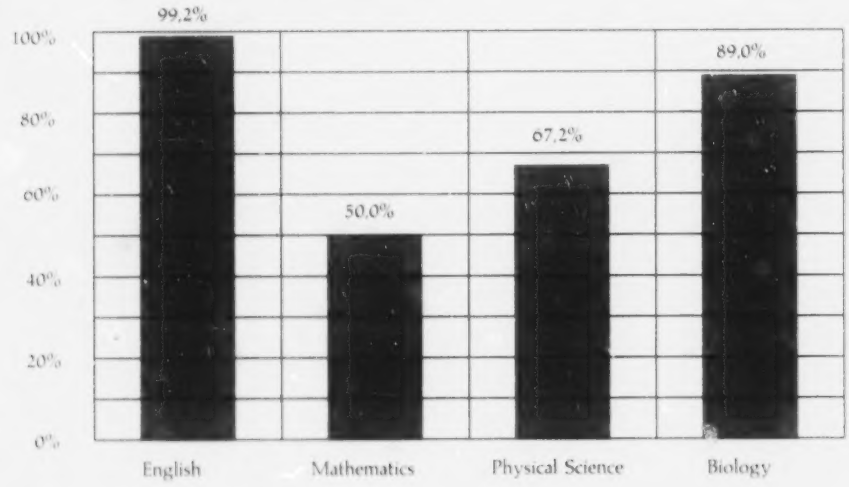
Figure 5.2 shows a breakdown of pass rates for English, Mathematics, Physical Science and Biology for the North West in 1996.

The English pass rate was very high (99,2%), higher than the national average of 94,9%. The pass rate for Mathematics shows that half the learners who wrote the examination passed (50%). This percentage was nonetheless higher than the national average of 49,9%. A factor that aggravated the low pass rate in Mathematics was that

only 40,3% of the total number of candidates wrote Mathematics. The gender spread for those learners who passed Mathematics was 52,7% males and 47,3% females.

In Physical Science 67,2% of the learners passed (just below the national average of 67,4%), and in Biology 89% of the learners passed (much higher than the national average of 60,3%). Of the total number of candidates, 23,6% wrote Physical Science, while 87,1% of all candidates in the North West wrote Biology.

Figure 5.2 Percentage pass rates per subject for full-time learners: 1996 Matriculation examination



Source: 1996 examination results, Department of Education

Table 5.2 gives the percentage pass rates for the above subjects per province, as well as the ranking of each province. As can be seen, according to the 1996 results, the North West province was ranked second with regard to its pass rate in English (99,2), differing by 0,1% from the province ranked first. For both Mathematics and Physical Science the North West was ranked sixth with regard to its pass rates (50,0% and 67,2% respectively). For Mathematics the North West pass rate differed by 26,7% from the province ranked first, and similarly in Physical Science it differed by 23,8% from the province ranked first. The Biology pass rate for the North West is ranked first (89,0%), 1,9% higher than the province ranked second and 50,4% higher than the province ranked ninth.

Table 5.2 Percentage pass rates in English, Mathematics, Physical Science and Biology according to province for 1996

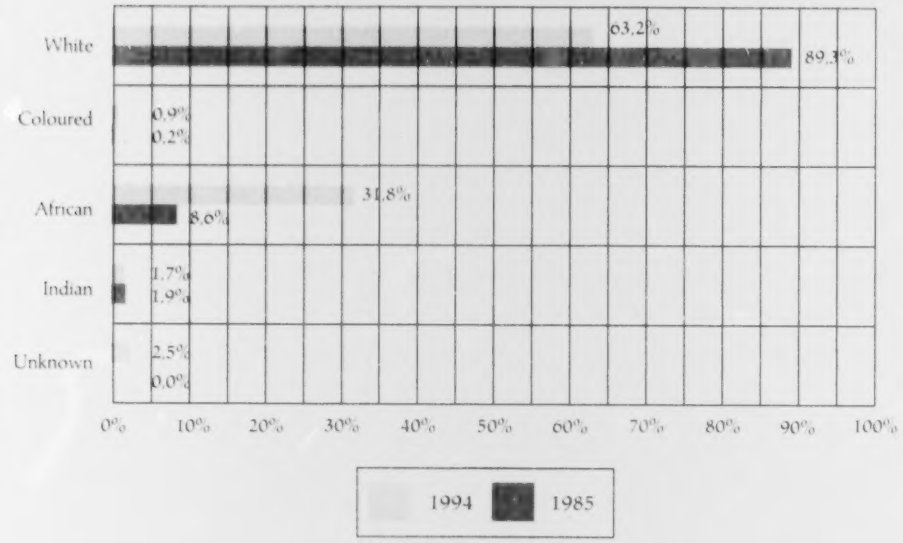
Province	English (%)	Rank 1	Mathematics (%)	Rank 2	Physical Science (%)	Rank 3	Biology (%)	Rank 4
Eastern Cape	91,6	8	51,4	5	63,0	7	64,6	5
Free State	98,3	4	43,5	7	72,5	4	63,7	6
Gauteng	98,6	3	58,9	4	71,7	5	66,5	4
KwaZulu-Natal	93,5	7	63,2	3	79,6	3	38,6	9
Mpumalanga	97,9	5	38,7	8	54,4	8	55,3	7
Northern Cape	99,3	1	70,8	2	85,1	2	77,4	3
Northern Province	90,9	9	20,7	9	43,9	9	51,5	8
North West	**[illegible]**	**2**	**[illegible]**	**[illegible]**	**[illegible]**	**[illegible]**	**[illegible]**	**[illegible]**
Western Cape	97,6	6	76,7	1	91,0	1	87,1	2
All provinces	**94,9**	**-**	**49,9**	**-**	**67,4**	**-**	**60,3**	**-**

PROOF 2

REGISTER OF GRADUATES

According to the data from the HSRC's Register of Graduates in the North West province, Figure 6.1 gives a spread of degrees by population group, and Figure 6.2 by field of study for the years 1985 and 1994 respectively.

Figure 6.1 Degrees awarded according to population group



As can be seen from the above figure, 63,2% of the people who graduated in 1994 and were residing in the North West province at the time of the survey were white, 0,9% were coloured, 31,8% were African, 1,7% were Indian, and a further 2,5% preferred not to disclose their population group. When one compares these figures with those of the 1985 data, the percentage of white graduates in the North West decreased by 26,1%,

while the percentage of African graduates increased by 23,2%. Those who preferred not to state their population group increased by 2,5%. The percentage of Indian graduates decreased by 0,2% and the percentage of coloured graduates increased by 0,7%.

Figure 6.2 Degrees awarded according to field of study

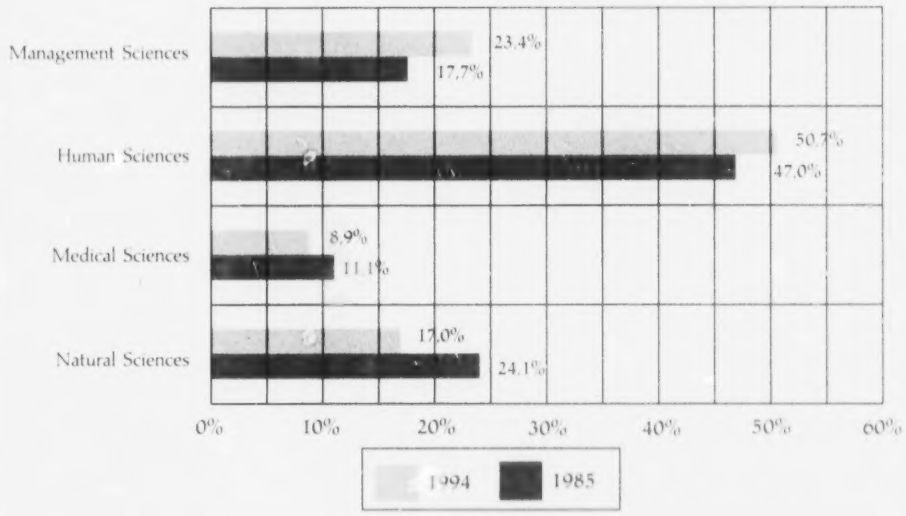


Figure 6.2 shows the percentages of people who graduated in a given field of study in a given year, that were residing in the North West province at the time of the surveys. The figure shows that 23,4% of the 1994 graduates that were residing in the North West qualified in the field of Management Sciences, 50,7% qualified in Human Sciences, 8,9% qualified in Medical Sciences, and 17% qualified in Natural Sciences. If one compares this information with that of the 1985 graduates, one finds that the percentages of those who qualified in Management and Human Sciences increased by 5,7% and 3,7% respectively, with a decrease of 7,1% in the Natural Science graduates and 2,2% in the Medical Sciences graduates.

Thus a comparison of the above data for 1994 and 1985 graduates in the North West province shows a shift in terms of population group (a substantially smaller percentage of white graduates, and substantially bigger percentage of African graduates, with small differences in the percentages of coloured and Indian graduates). There was also a shift with regard to the field of study of resident graduates (more Management and Human Sciences graduates, with the Natural and Medical Sciences graduates decreasing).

SUMMARY

Various educational indicators from various sources pertaining to the North West province were considered in this publication. The first source was the School Register of Needs Survey, where some indicators were discussed in figures and others in maps. Two-thirds of the schools in the North West were primary-level schools, with only a small fraction of a percentage representing technical colleges, and just over one and a half percent being special schools. The rest were mainly secondary level, except for the the relatively small per centage of combined schools. Although school sizes in terms of enrolment varied greatly, there were more smaller than bigger schools. As far as enrolment per grade was concerned, the flow pattern from one grade to the next was not the norm, but showed a higher enrolment for Grade 2 than for Grade 1, thus indicating a high repeater rate in Grade 2. From this point the flow from one grade to the next in the primary phase was quite good, with the enrolments in Grades 6 and 7 being very similar which could also indicate a higher than expected repeater rate for Grade 7. There was also an unexpectedly high enrolment for Grade 10 compared with Grade 9, possibly indicating a high repeater rate in this grade too. As expected educators made up nine-tenths of the staff complement. For most of the districts in the province the learner:classroom ratio was below 40:1, and the learner:educator ratio for the southern and western parts of the province was higher than for most of the rest of the province. The primary:secondary learner ratio was 2:1 and less in all but seven of the districts in the province, with the highest being one district with 4:1.

Consideration of the condition of the buildings showed that, although fewer than ten percent were considered unsuitable for teaching (in a poor or very poor condition), nearly half the schools were in need of paint and minor repairs. Up of eighty percent of the schools in the province was also without Home Economic rooms, libraries, laboratories, and other specialised subject classrooms. Administrative rooms were also needed by just fewer than half the schools. Above eighty percent of the schools were also without a proper indoor water supply and fencing, and telecommunication

facilities and electricity were needed by more than half of the schools. Water at most schools was either piped or came from boreholes, although two-thirds of the schools only had water available on site, not indoors. More than seven percent did not have any water available within walking distance. Just over half the schools used a pit latrine for sanitation, while a flush system to a septic tank or main sewer was used by more than a quarter of the schools. Just over five percent of the schools did not have any sanitation facilities. There is a pressing need for improvements such as stormwater drains and paved roads and paths with more than two-thirds of the schools without these improvements. Although the need for landscaping was not as big, it was nevertheless also substantial.

More than three-quarters of the schools lacked resources such as media equipment, media collections, general equipment and materials. The best provided resource was stationery: more than half the schools had an adequate provision, but just over a third were still inadequately supplied and a small percentage had no stationery. Textbooks were also fairly well supplied with a good percentage of schools having an adequate provision when compared with other resources listed earlier. However, just fewer than half the schools still either had none or had an inadequate provision. Various types of furniture were also needed, with the biggest need being for learner desks and chairs (a shortage of 126 759) and various types of administrative furniture. Nearly a fifth of the schools in the province used other facilities (like churches, halls, other schools, etc.) for instruction in the interim and just over a quarter of the schools were used for activities other than normal teaching (like adult basic education, community centres, etc.).

According to the TIMSS survey, the North West learners scores for both Standard 6 Science and Mathematics were low, but this was due to the Standard 5 sample containing two schools from privileged communities whereas the Standard 6 sample comprised only disadvantaged schools. When the two privileged schools were removed from the sample, the averages for both Standard 5 Mathematics and Science fell significantly below those for Standard 6. All the above scores were nonetheless not much different from the national averages. In a comparison of scores from disadvantaged schools in all provinces, the North West disadvantaged schools performed significantly better, especially in Science. In both Standards 5 and 6, the performance in Mathematics was noticeably better than in Science, as was the case for the national sample as a whole. However, for the best performing schools the Science scores tended to be better than the Mathematics scores.

The Longitudinal Survey of Scholastic Achievement aims to provide information on the level of knowledge and understanding of Mathematics, Science and the English language at Grade 9 level. Compared with the other provinces the North West had the fourth lowest mean in Mathematics and the fourth best means in Science and English. A comparison between the matriculation examination results for 1995 and the

outcome of the Longitudinal Survey of Scholastic Achievement (Grade 9, for 1995) indicated a close correlation, which means that performance in earlier grades can be a good predictor of future achievement. Data for some of the socio-economic variables, for example the availability of electricity, running water in the house, water-borne sewage and a separate bedroom for the learner, were also collected. The average rank for the variables indicated that the North West was in the worst position compared with the other provinces.

Enrolment figures and pass rates also yield important information. When calculating overage learners, except for Grades 1 and 2, the percentage overage learners in the primary grades approached or exceeded 20%. In the secondary grades more than 26% of all learners were overage for the grade in which they were enrolled. The problem of overage learners increased with higher grades. Almost 70% of the Grade 12 learners in the North West province passed the matriculation examination (69,4%) in 1996, rating them third compared with the other provinces. Six thousand four hundred and ninety seven more females than males wrote the examination, while only 3 225 more females than males passed the examination. The pass rates for English, Mathematics, Physical Science and Biology were 99,2%, 50,0%, 67,2% and 89,0% respectively, which rated the North West second, sixth, sixth and first respectively in the mentioned subjects, compared with the other provinces.

According to the HSRC's Register of Graduates, a comparison of the 1994 and 1985 data on the graduates that were residing in the North West province at the time of the survey, shows a shift of graduates with regard to population group: there was a substantial decrease in the percentage of white graduates and a substantial increase in the percentage of African graduates, with the coloured graduates gaining just over half a percentage and the Indian graduates remaining virtually the same for the two years. Furthermore, with regard to field of study, a comparison of those who qualified in 1994 with those who qualified in 1985 showed that the percentage of graduates in the fields of Management and Human Sciences increased, while Medical and Natural Science graduates decreased over the period in question.

APPENDIX

SCHOOL REGISTER OF NEEDS SURVEY DATA PER MAGISTERIAL DISTRICT FOR THE NORTH WEST PROVINCE
(Refer Maps 2 - 12)

MAP 2 Learner enrolment
MAP 3 Total number of primary and secondary schools
MAP 4 Ratio of 5 to 14-year-old children to the number of primary schools
MAP 4a Average size of primary schools
MAP 5 Learner:classroom ratio
MAP 6 Classroom shortages in schools
MAP 7 Learner:educator ratio
MAP 8 Primary:secondary learner ratio
MAP 9 Percentages of schools in a poor and very poor condition
MAP 10 Percentages of schools without water facilities
MAP 11 Percentages of schools not wired and supplied with electricity
MAP 12 Percentages of schools without telephones

	MAP											
District	**2**	**3**	**4**	**4a**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Batokeng	30 280	08	472	442	33	60	23	1	5	1	28	53
Bloemhof	7 048	15	323	384	35	3	39	2	0	13	53	47
Brits	28 431	05	444	416	27	131	28	2	7	7	38	35
Christiana	4 639	11	374	421	43	21	35	3	0	14	29	43
Cologny	6 674	26	268	189	35	12	34	2	0	12	65	54
Delareyville	9 312	51	205	155	37	45	30	4	12	8	65	82
Ditsobotla	66 962	146	479	463	39	247	28	2	12	3	74	66
Ganyesa	27 665	80	295	330	42	140	31	3	23	3	64	90
Klerksdorp	82 095	133	553	593	33	180	32	2	11	12	29	25

	MAP											
District	**2**	**3**	**4**	**4a**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Koster	7529	39	215	160	31	28	35	3	15	30	68	75
Kudumane	53 346	177	275	297	39	215	29	2	11	0	34	81
Leburutshe	33 912	78	534	440	38	150	20	2	10	1	72	52
Lichtenburg	23 989	87	267	243	41	59	34	3	9	9	51	54
Madikwe	22 172	69	412	372	31	40	22	2	0	0	71	64
Mankwe	48 181	133	370	406	30	140	27	2	11	2	69	72
Marico	14 519	54	206	222	33	45	28	2	15	13	50	60
Molopo	62 870	121	503	571	36	184	27	2	3	7	49	59
Moretele	94 012	173	783	589	46	559	31	2	10	7	65	78
ODI I	104 065	190	871	600	39	323	27	2	4	0	44	51
ODI II	13 366	37	321	347	31	26	24	1	5	0	59	59
Potchefstroom	38 251	93	456	347	26	72	2	2	9	9	40	34
Rustenburg	29 441	59	469	488	30	41	30	2	8	8	16	36
Schweizer-Reneke	14 798	50	300	226	52	83	37	3	28	28	68	70
Swartruggens	3 894	22	151	146	23	9	27	2	14	14	50	14
Taung	64978	149	600	509	40	253	32	2	5	0	70	63
Ventersdorp	11 422	56	237	206	40	32	30	3	11	9	72	58
Vryburg	24 627	96	304	231	36	97	31	3	7	4	51	63
Wolmaransstad	20 478	74	249	229	39	84	36	3	14	14	53	67

MAPS

MAP 1: Population estimates for 1996

MAP 2: Learner enrolment

MAP 3 Total number of primary and secondary schools

MAP 4: Ratio of 5 to 14-year-old learners to the number of primary schools

MAP 4a: Average size of primary schools

MAP 5: Learner:classroom ratio

MAP 6: Classroom shortages in classrooms

MAP 7: Learner:educator ratio

MAP 8: Primary:secondary learner ratio

MAP 9: Percentages of schools in a poor and very poor condition

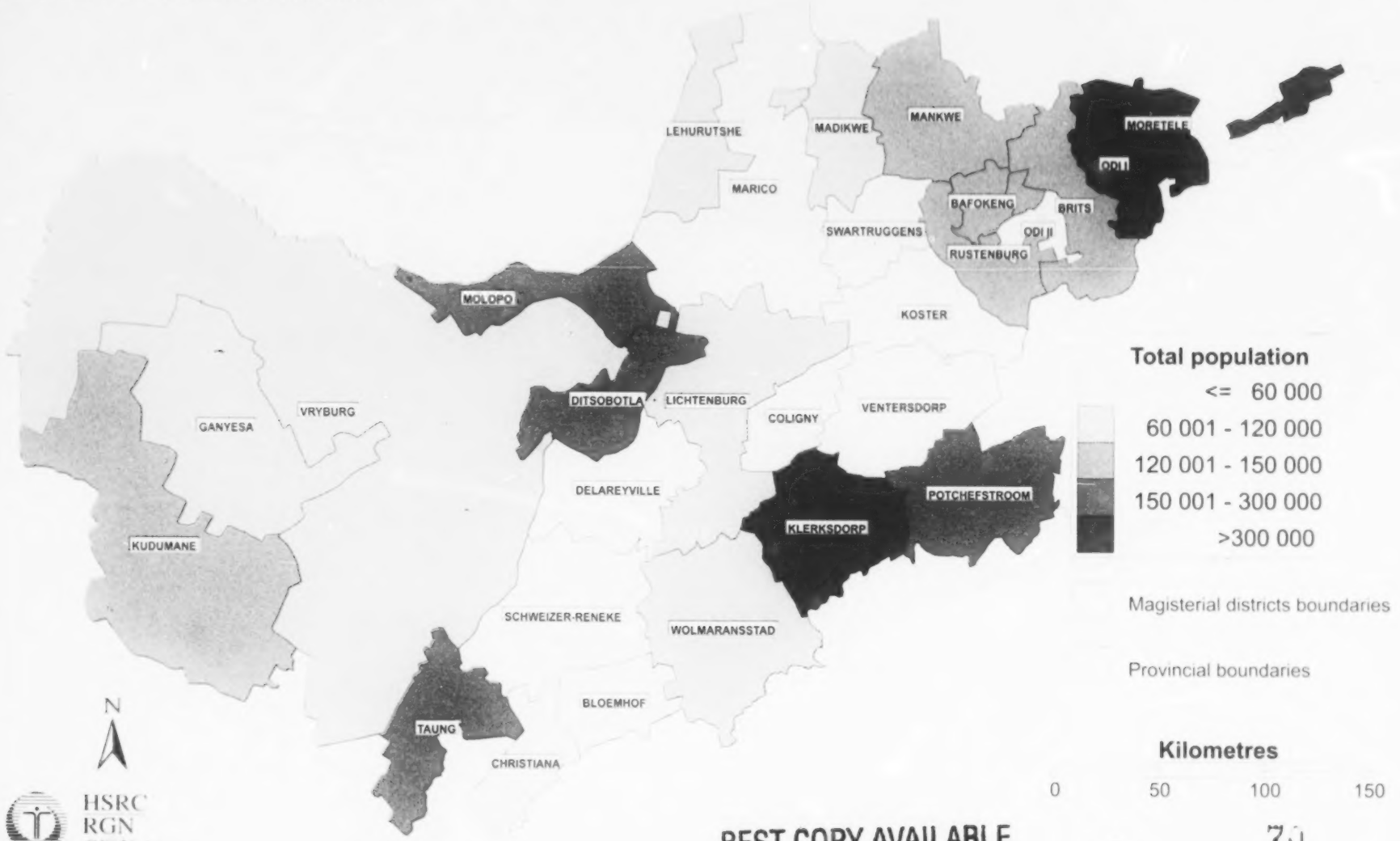
MAP 10: Percentages of schools without water facilities

MAP 11: Percentages of schools not wired and supplied with electricity

MAP 12: Percentages of schools without telephones

Map 1: Population estimates for 1996

Source: 1996, Population estimates (HSRC, GIS Unit)



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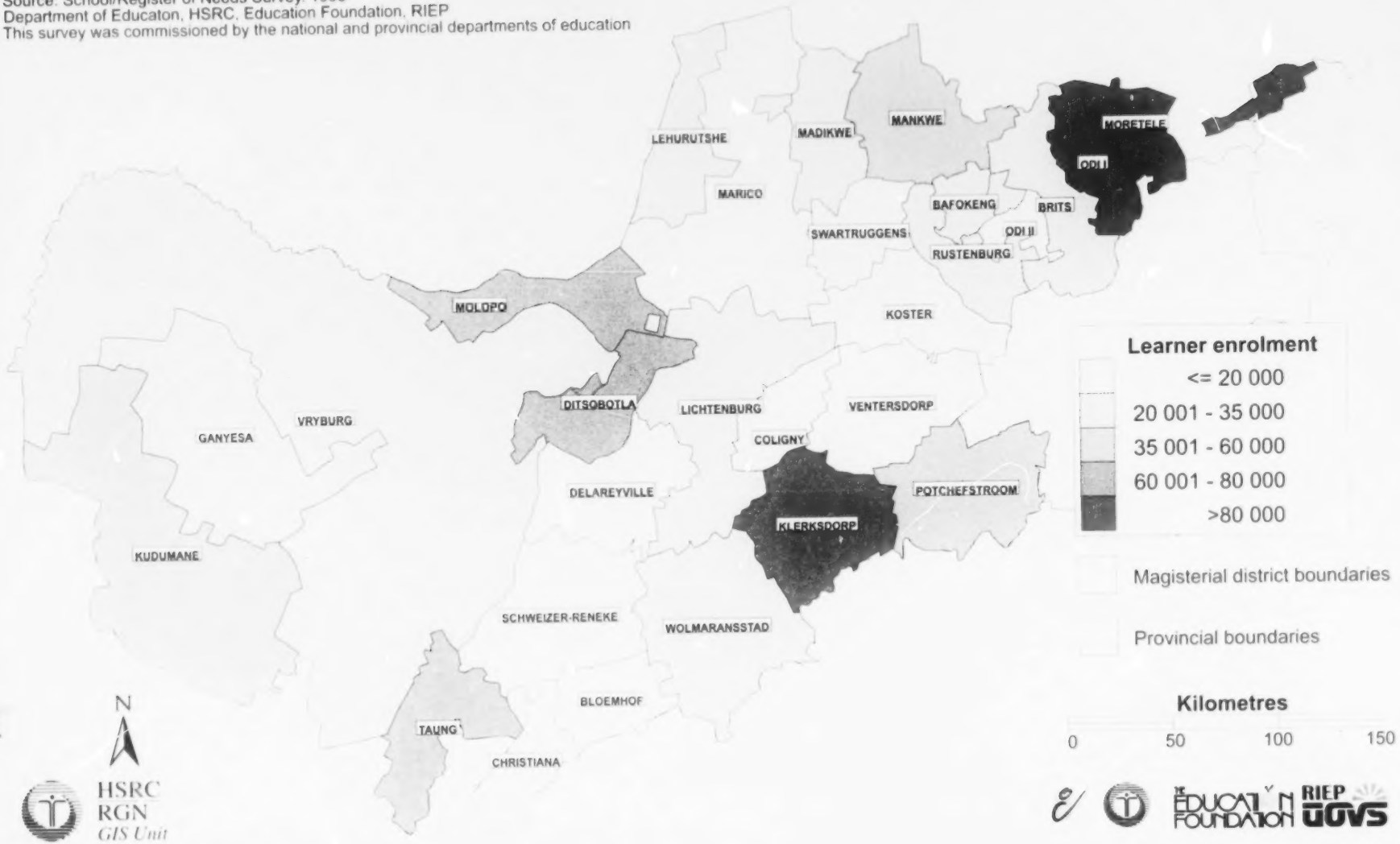
Map 2: Learner enrolment

Source: School/Register of Needs Survey. 1996
Department of Educaton, HSRC, Education Foundation, RIEP
This survey was commissioned by the national and provincial departments of education



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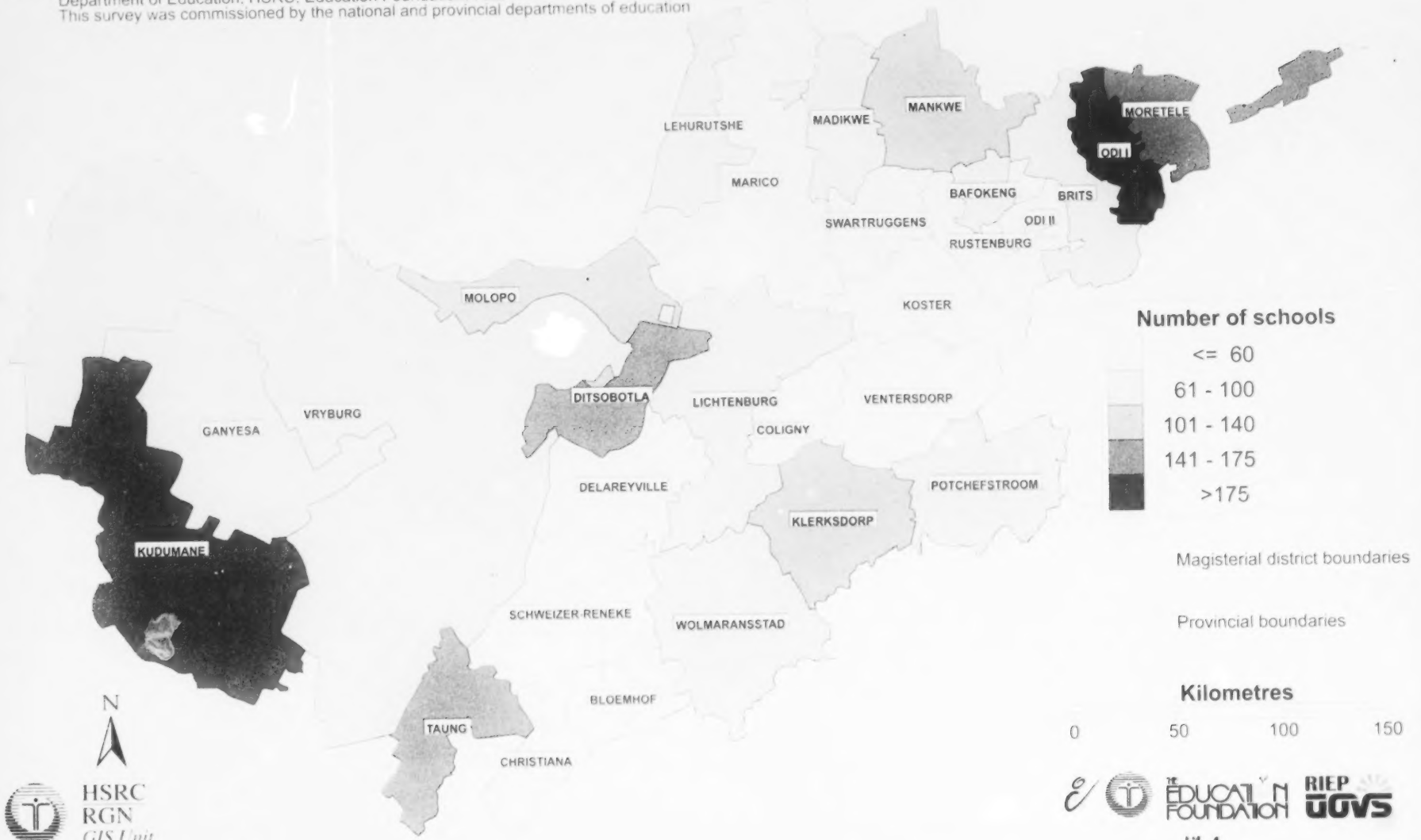
Map 3: Total number of primary and secondary schools

Source: School/College Register of Needs Survey, 1996
Department of Education, HSRC, Education Foundation, RIEP
This survey was commissioned by the national and provincial departments of education



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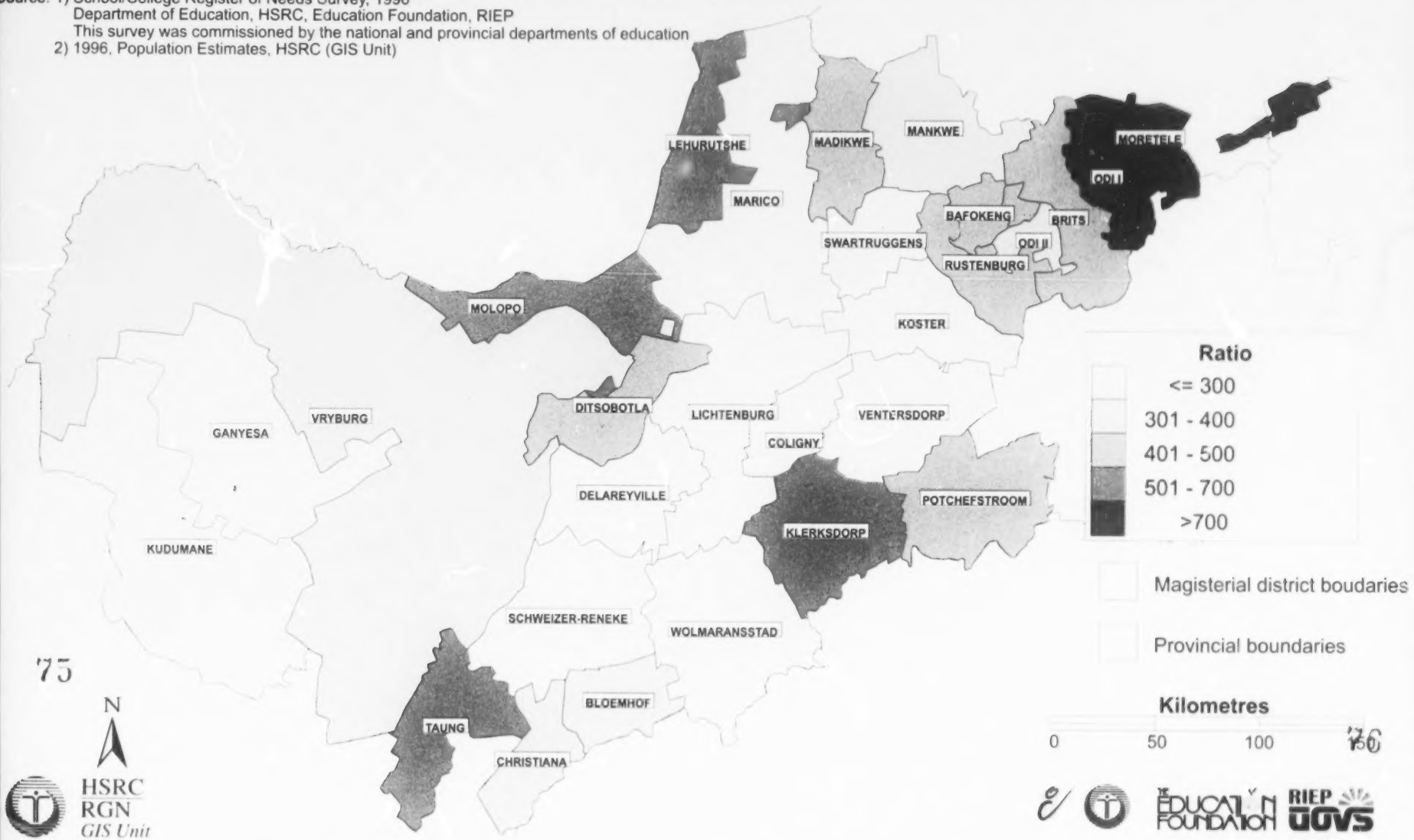
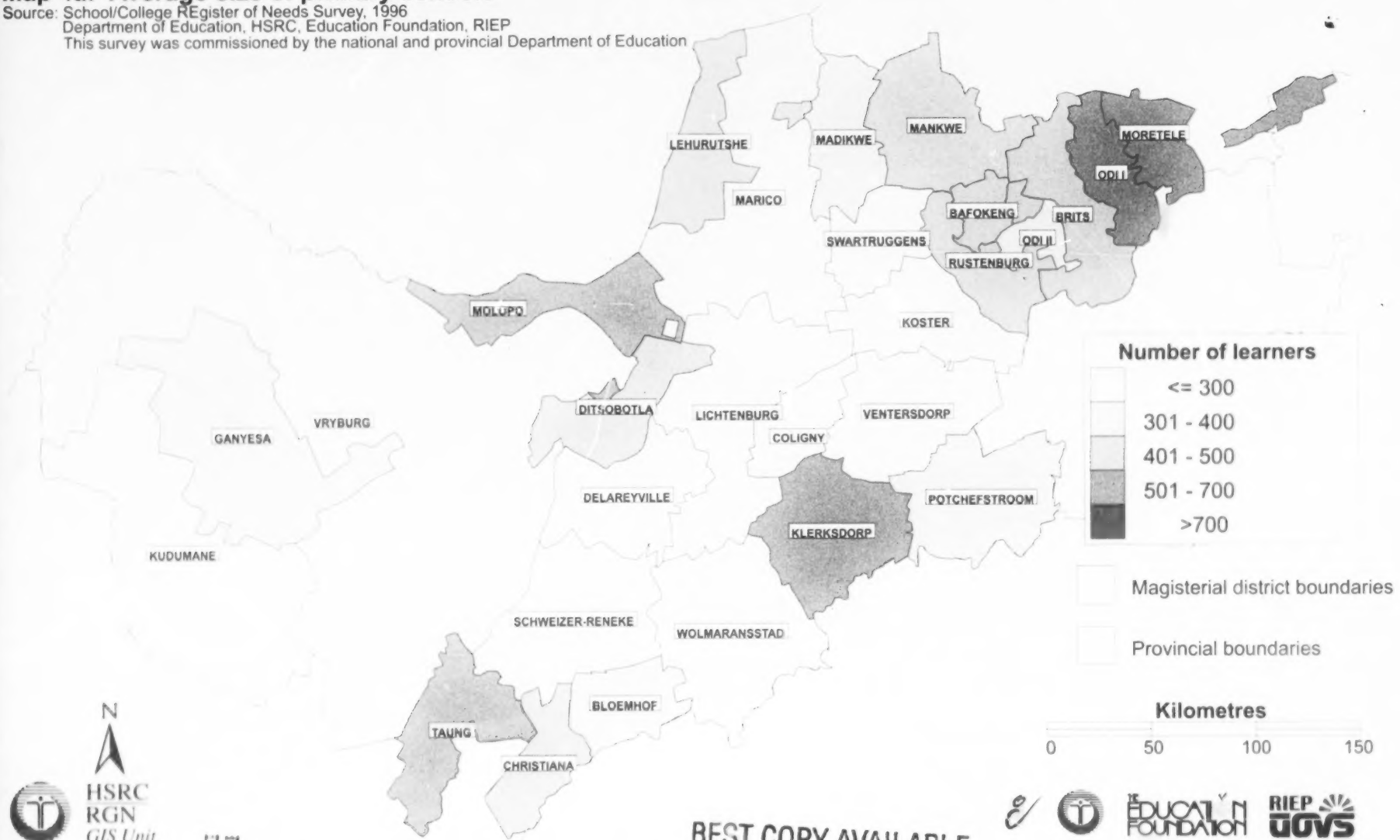
Map 4: Ratio of 5 to 14-year-old learners to the number of primary schools

Source: 1) School/College Register of Needs Survey, 1996
Department of Education, HSRC, Education Foundation, RIEP
This survey was commissioned by the national and provincial departments of education
2) 1996, Population Estimates, HSRC (GIS Unit)



Map 4a: Average size of primary schools

Source: School/College REgister of Needs Survey, 1996
Department of Education, HSRC, Education Foundation, RIEP
This survey was commissioned by the national and provincial Department of Education



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North West

Map 5: Learner:classroom ratio

Source: School/College Register of Needs Survey, 1996
Department of Education HSRC, Education Foundation, Roep
This survey was commissioned by the national and provincial departments of education

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Map 6: Classroom shortages in schools

Source: School/College Register of Needs Survey, 1996
Department of Education, HSRC, Education Foundation, RIEP
This survey was commissioned by the national and provincial departments of education

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Map 7: Learner:educator ratio

Source: School/College Register of Needs Survey, 1996
Department of Education, HSRC, Education Foundation, RIEP
This survey was comissioned by the national and provincial departments of education

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Map 8: Primary:secondary learner ratio

Source: School/College Register of Needs Survey, 1996
Department of Education, HSRC, Education Foundation, RIEP
This survey was commissioned by the national and provincial departments of education

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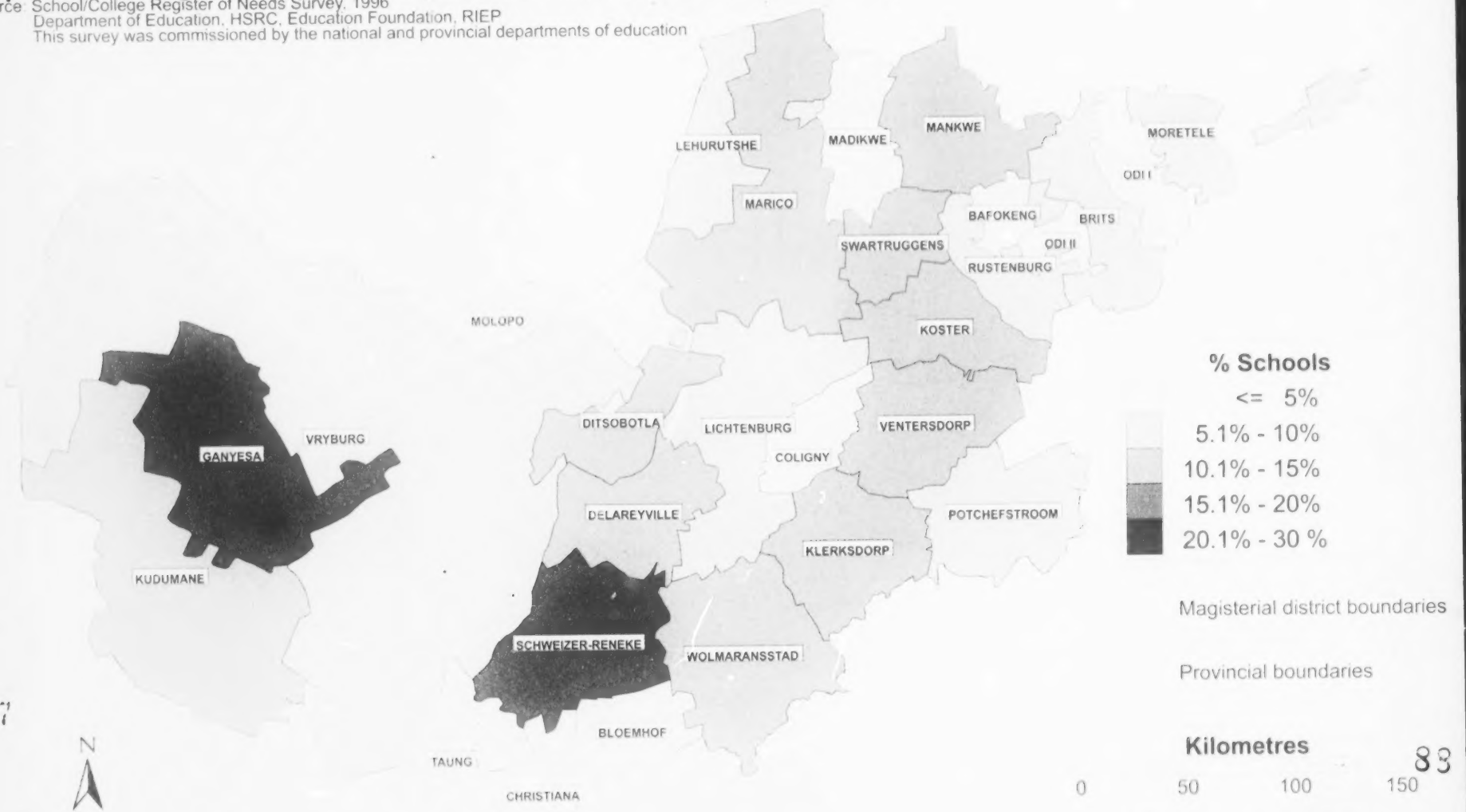
Map 9: Percentages of schools in a poor and very poor condition

Source: School/College Register of Needs Survey, 1996
Department of Education, HSRC, Education Foundation, RIEP
This survey was commissioned by the national and provincial departments of education



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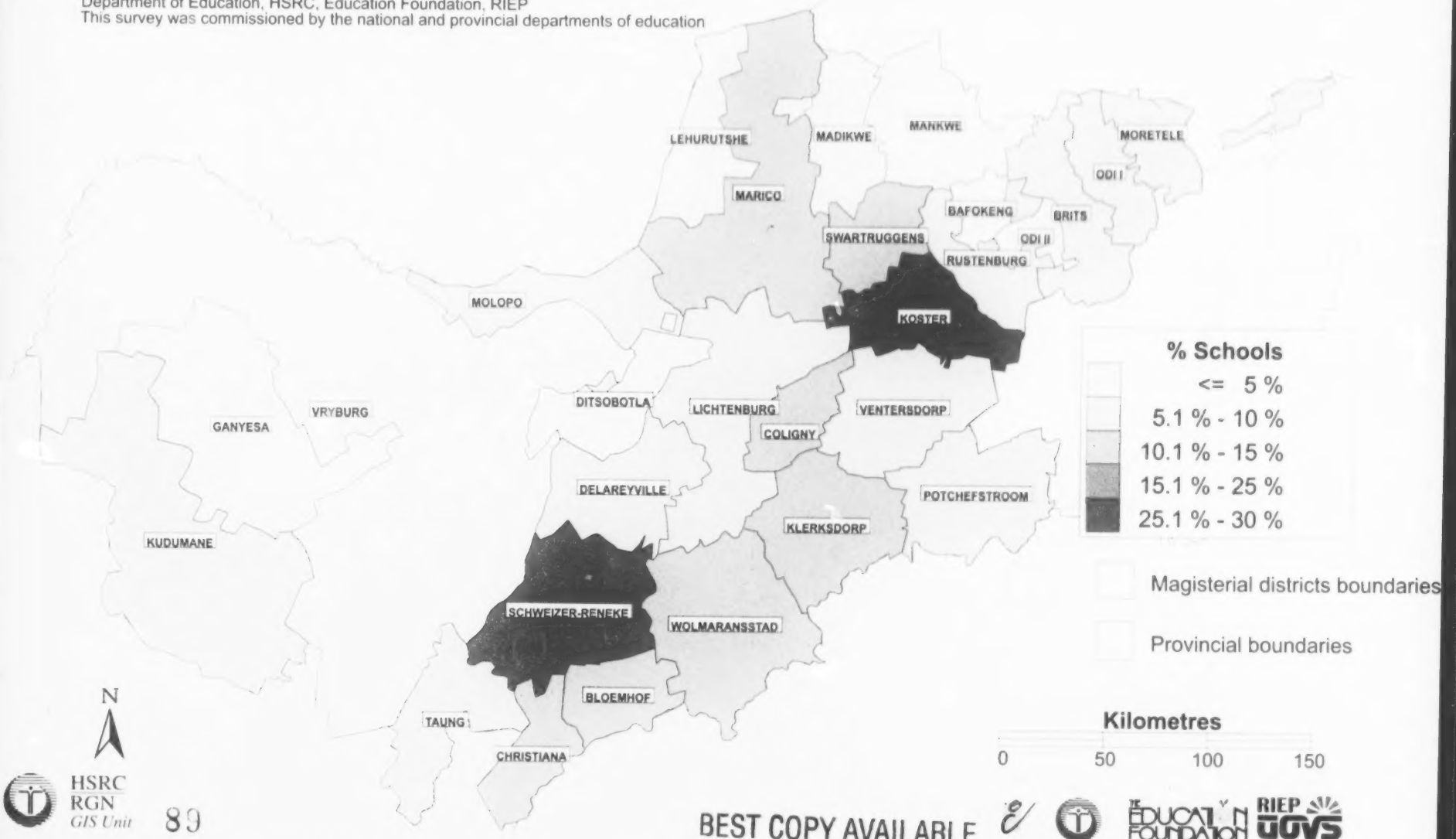
North West

Map 10: Percentages of schools without water facilities

Source: School/College Register of Needs Survey, 1996
Department of Education, HSRC, Education Foundation, RIEP
This survey was commissioned by the national and provincial departments of education



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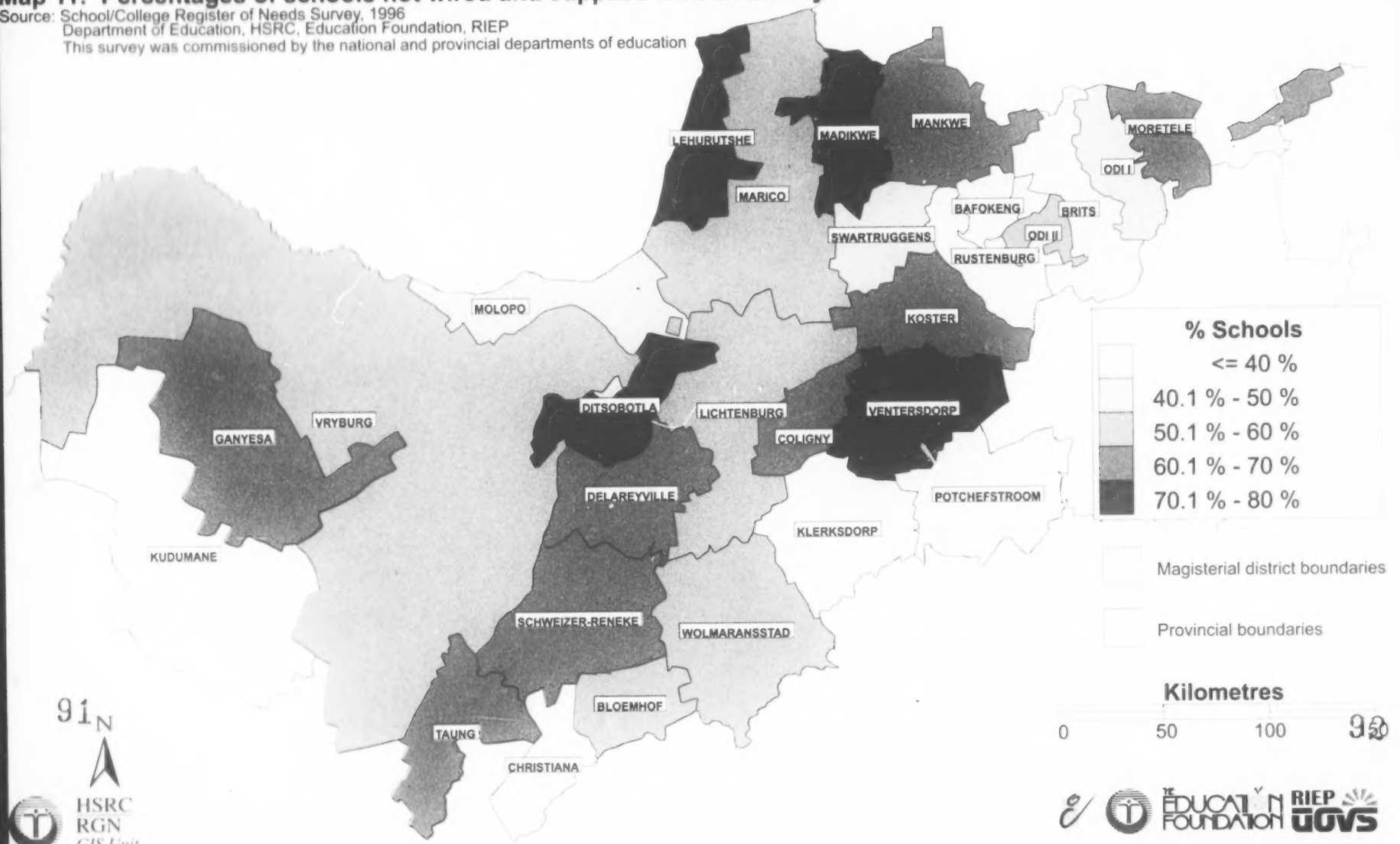
Map 11: Percentages of schools not wired and supplied with electricity

Source: School/College Register of Needs Survey, 1996
Department of Education, HSRC, Education Foundation, RIEP
This survey was commissioned by the national and provincial departments of education



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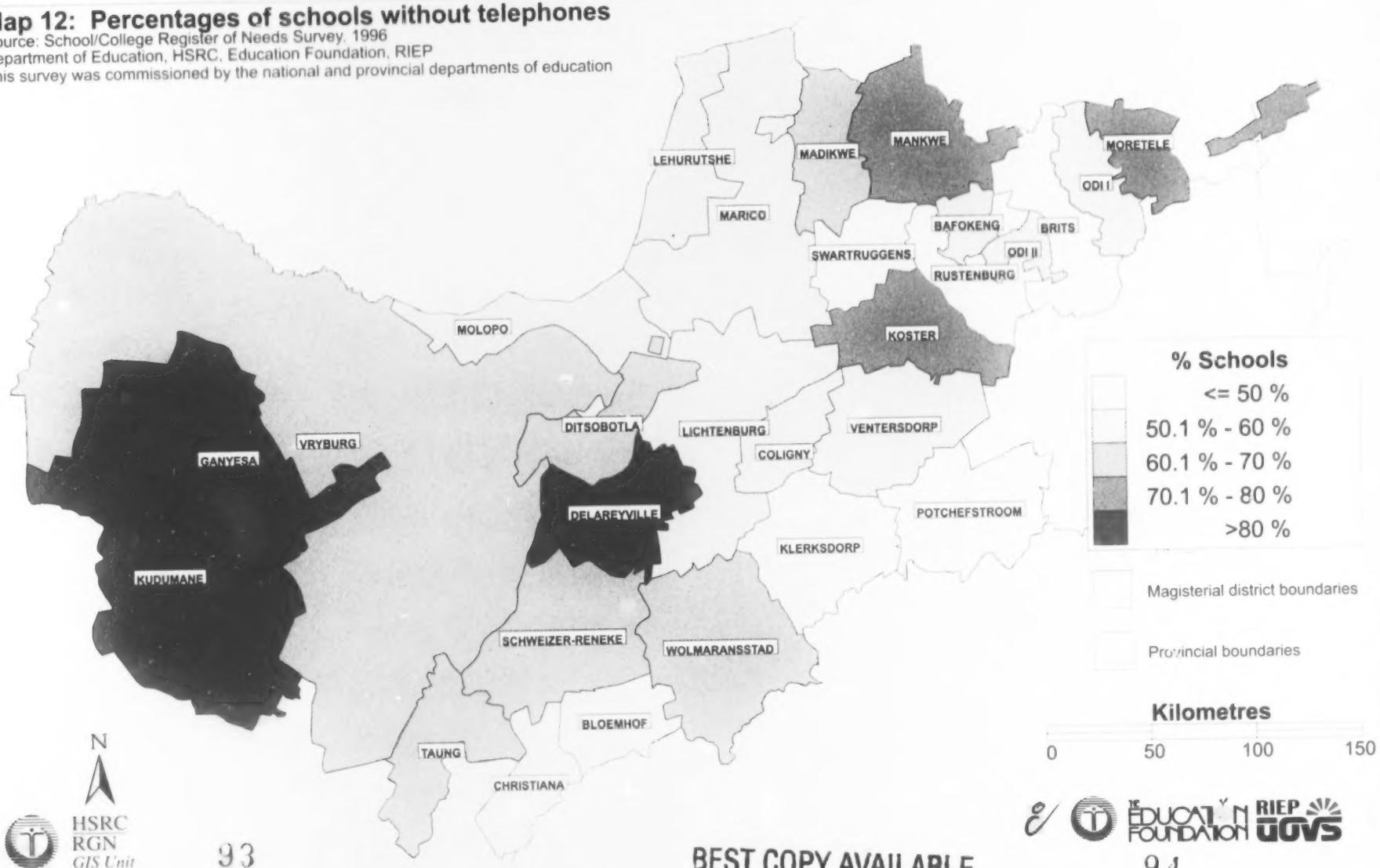
Map 12: Percentages of schools without telephones

Source: School/College Register of Needs Survey, 1996
Department of Education, HSRC, Education Foundation, RIEP
This survey was commissioned by the national and provincial departments of education



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The HSRC has over many years created a number of databases containing information of great potential value for the development of an education indicator/monitoring system for South Africa. The HSRC has thus for some time been maintaining an education database at individual school level in order to support research into education. During 1996 the School Register of Needs was established by the Department of Education, the Human Sciences Research Council, the Education Foundation and the Research Institute for Education Planning at the University of the Free State. The establishment of the database was co-funded by the Department of Education and the Swedish International Development Agency (SIDA). Apart from the education database, data from several other research projects such as the Longitudinal Survey of Scholastic Achievement, the Third International Mathematics and Science Survey and the Register of Graduates are dealt with in this publication.

The education indicators included in this series of publications provide information on the condition of educational facilities and the extent of educational provision. The availability of resources, materials, equipment and services are also discussed. Indicators of the outputs of the education system are the matriculation examination results, the findings of the Longitudinal Survey of Scholastic Achievement in Mathematics, Science and English, and the results of the Third International Mathematics and Science Survey.

C.J. Sheppard
Director: Education and Training Information Systems, HSRC

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